

THE
DENVER FIRE CLAY COMPANY

MANUFACTURERS

ASSAYERS' AND CHEMISTS'
SUPPLIES

SCIENTIFIC APPARATUS

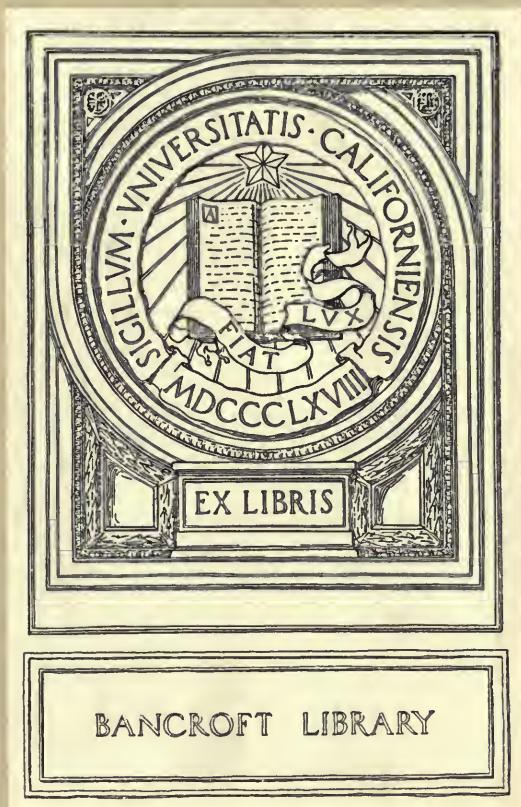
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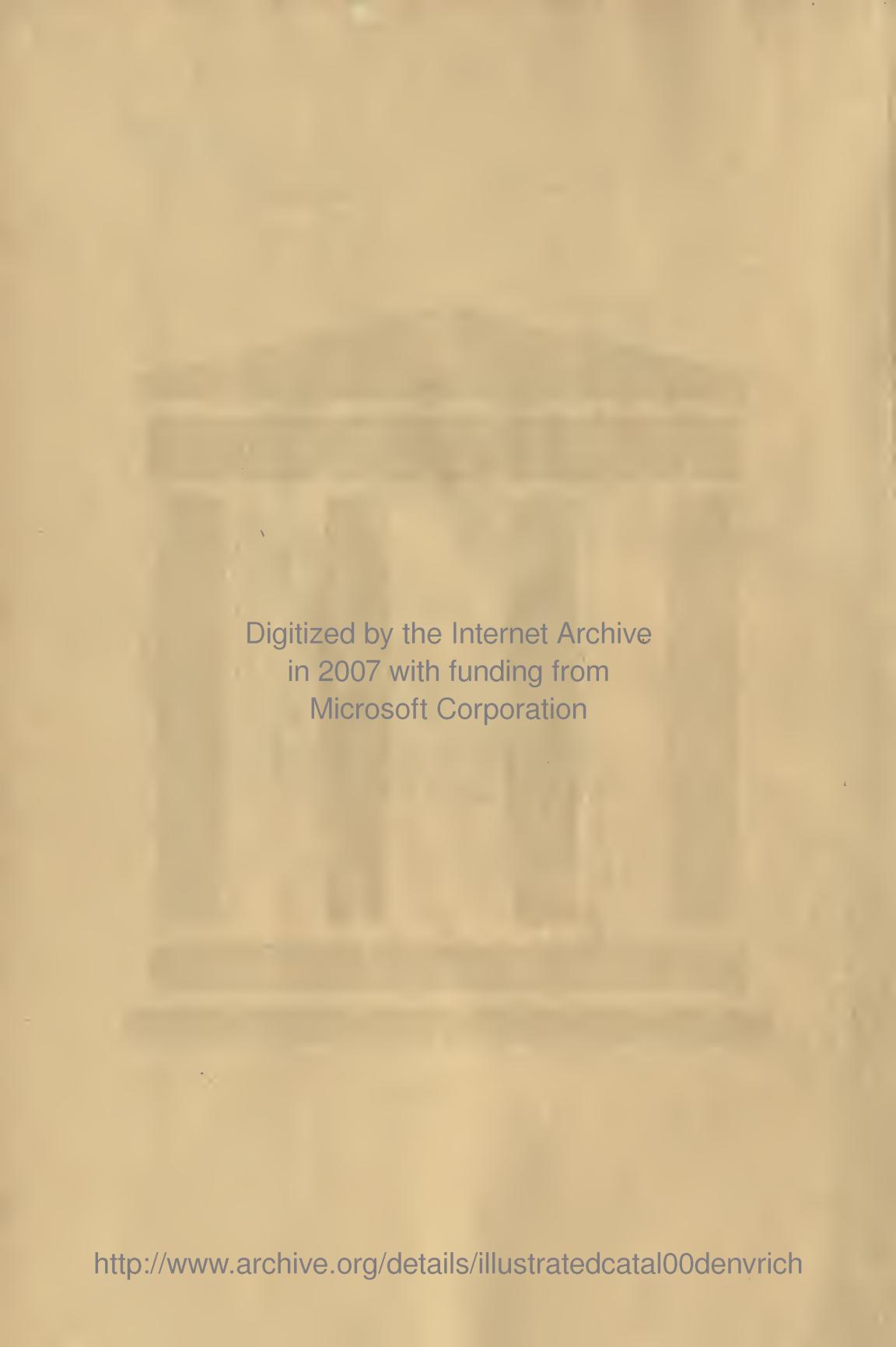
DENVER, COLORADO
SALT LAKE CITY, UTAH
U. S. A.

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1910

ILLUSTRATED CATALOGUE

OF

ASSAYERS' AND CHEMISTS'
SUPPLIES

SCIENTIFIC APPARATUS

The Denver Fire Clay Co.

W. W. CASE, Jr., Pres. and Mgr.

JOHN DONALDSON, Sec'y and Treas.

—————MANUFACTURERS OF—————

Crucibles, Muffles, Scorifiers, Furnaces,
Chemical and Physical Apparatus,
General Laboratory Supplies, Etc.

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GOLD MEDALS



ALL WORLD'S EXPOSITIONS



THE DENVER FIRE CLAY COMPANY.

DUTY-FREE IMPORTATIONS.

By authority of Act of Congress, June 22, 1874, all universities, colleges, schools, literary, scientific or religious societies of the United States are permitted to import, free of duty, instruments, books, charts, etc., to be used in connection with the educational exercises of the institution for which they are ordered. We have made special arrangements in this branch of our business and shall be pleased to receive orders, which we fill at the original price of European dealers.

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We solicit Export Orders, being thoroughly familiar with all customs regulations. Our long experience in this business enables us to prepare the necessary documents accurately, insuring our customers the quickest possible service.

SHIPPING.

Unless definite shipping instructions are given, we will use our own judgment, forwarding by cheapest or quickest route.

MAILING.

Acids, explosives, gasoline and other highly inflammable substances are prohibited from the mails. It is not advisable to mail fragile or delicate articles, owing to the risk of breakage.

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All goods are packed with the greatest care by experienced packers, and every precaution is taken to prevent breakage in transit. We cannot, however, assume responsibility for safe transportation. Our liability ceases when goods are received for in good condition by the carrier.

TERMS.

Prices in this catalogue supersede all former prices, but are necessarily subject to change without notice, as market fluctuates.

Orders from parties unknown to us should be accompanied by cash or satisfactory references.

Goods will be sent C. O. D. if requested, but only if remittance is made sufficient to cover transportation charges both ways.

Sight Draft attached to Bill of Lading on all orders for Cyanide, Mercury, Zinc Shavings, Gold and Platinum.

QUOTATIONS.

Quotations are subject to change without notice, and when made from stock are subject to sale of quoted goods on intervening orders.

DELIVERY.

Sales and delivery are subject to strikes, accidents, or other causes beyond our control.

Reference Tables and Information

COMPARISONS AND EQUIVALENTS.

The U. S. Standard of weight is Troy pound, and was copied in 1827 from the imperial Troy pound of England, for the use of the United States Mint, and there deposited. It is standard in air at 62° Fahr., the barometer at 30 inches.

Troy Weight.

24 grains	=	1 dwt.
480 "	=	20 " = 1 oz.
5760 "	=	240 " = 12 " 1 lb. = 22.816 cub. in. of distilled water at 62° Fahr.

Avoirdupois Weight.

1 drachm	=	27.34375 grains Troy.
16 "	=	1 oz. = 437.5 "
256 "	=	16 " = 1 lb. = 1.2153 lb. Troy.
6400 "	=	400 " = 25 " = 1 quarter.
25600 "	=	1600 " = 100 " = 4 " = 1 cwt.
512000 "	=	32000 " = 2000 " = 80 " = 20 " = 1 ton.

Apothecaries' Weight.

20 grains	=	1 scruple.
60 "	=	3 " = 1 drachm.
480 "	=	24 " = 8 " = 1 oz.
5760 "	=	288 " = 96 " = 12 " = 1 lb.

Metric, or French Weights.

	Grammes	Troy				
		Grms.				
1 Milligramme	= .001	= .01543				
1 Centigramme	= .01	= .15432	Troy	Troy	Avoir.	
1 Decigramme	= .1	= 1.5432	Ozs.	Lbs.	Ozs.	Avoir. Lbs.
1 Gramme	= 1.	= 15.432	= .032	= .00267	= .03528	.0022047
1 Decagramme	= 10.	= .....	.321	.02679	.3528	.022046
1 Hectogramme	= 100.	=	3.215	.26792	3.52758	.22046
1 Kilogramme	= 1000.	=	32.150	.26792	35.2758	2.2046
1 Myriagramme	= 10000.	=	267.92	=	=	22.046
1 Quintal	= 100000.	=	267.92	=	=	220.46
1 Tonneau	= 1000000.	=	2679.2	=	=	2204.6

Assay Ton Weights.

The Assay Ton Weights is a system made up from a comparison of the Avoirdupois, Troy and Gramme Weights, and will be found extremely simple and useful, saving a vast amount of calculation and labor.

The unit of the system is the assay ton = 29.166 grammes. Its derivation will be seen at a glance.

1 lb. Avoirdupois = 7,000 Troy grains.

2,000 lbs. = 1 ton.

$2,000 \times 7,000 = 14,000,000$ Troy grains, in one ton Avoirdupois.

480 Troy grains = 1 oz. Troy.

$14,000,000 \div 480 = 29.166$ Troy ozs. in 2,000 lbs. Avoirdupois.

There are 29.166 milligrammes in one assay ton (A. T.); hence

2,000 lbs. is to 1 A. T., as 1 oz. Troy is to 1 milligramme.

Therefore, if 1 A. T. of ore assays 1 milligramme of gold or silver, the ton contains one ounce Troy.

Long Measure.

The standard unit of the United States and British linear measure is the yard. It was intended to be exactly the same for both countries, but in reality the United States' yard exceeds the British standard by .00087 of an inch. The actual standard of length for the United States is a brass scale 82 inches long prepared for the Coast Survey and deposited in the office of Weights and Measures at the U. S. Treasury Department in Washington. The yard is between the 27th and the 63d inches of this scale. The temperature at which the scale is designed to be standard, and at which it is used in the U. S. Coast Survey is 62° Fahrenheit.

Inches	Foot	Yard	Fathom	Perch	Furlong	Mile	League
12 =	1.						
36 =	3.	= 1.	Fathom				
72 =	6.	= 2.	= 1.	Perch			
198 =	16.5 =	5.5 =	2.75 =	1	Furlong		
7920 =	660. =	220. =	110. =	40 =	1	Mile	
63360 =	5280. =	1760. =	880. =	320 =	8 =	1	League
190080 =	15840. =	5280. =	2640.	960 =	24 =	3 =	1

Metric, or French Linear Measure.

	Metre	U. S. Ins.	Feet	
1 Millimetre =	.001	.03937	.00328	
1 Centimetre =	.01	.3937	.0328	Yards
1 Decimetre =	.1	3.937	.32808	.10936
1 Metre =	1.	39.3704	3.2808	1.0936
1 Decametre =	10.	393.704	32.808	10.936
1 Hectometre =	100.	.....	328.08	109.36
1 Kilometre =	1000.	.....	3280.8	1093.6
1 Myriametre =	10000.	.....	32808.	10936.
				= .621375

Solid Measure

1,728 cubic inches = 1 cubic foot.
46,656 cubic inches = 27 cubic feet = 1 cubic yard.

Metric, or French Cubic or Solid Measure.

	Cu. Metres	U. S. Cu. Ins.	
1 Cubic Centimetre	.000001	.061025	
1 Cubic Decimetre	.001	61.025	U. S. Cu. Ft.
1 Centistere	.01	610.25	.353156 U. S. Cu. Yds.
1 Decistere	.1	6102.5	3.53156 = .13080
1 Stere	1.	.....	35.3156 = 1.3080
1 Decastere	10.	.....	353.156 = 13.080
1 Hectostere	100	.....	3531.56 = 130.80

Apothecaries' Measure

Gallon	Pints	Ounces	Drams	Mins.	Cu. Ins.	Grains	Cu. C.M.
1	= 8	= 128	= 1024	= 61440 = 231.	= 58328.886	= 3785.00	
	1	= 16	= 128	= 7680	= 28.875	= 7291.1107	= 473.11
		1	= 8	= 480	= 1.8047	= 455.6944	= 29.57
				1	= 60 —	0.2526	= 56.9618 — 3.70

Reference Tables

Comparison of Avoirdupois, Metric, Troy and Assay Ton Weights.

	Avoir. Ounce.	Avoir. Pound.	Milligram.	Gram.	Troy Grain.	Troy Dwt.	Troy Ounce.	Troy Pound.
1 Avoir. Oz.	1.	.06250	28349.5493	28.349540	437.5	18.22917	.911458	.07595483
1 Avoir. Lb.	16.	1.	453592.6449	453.5926449	7000.	291.66666	14.583333	1.215277
1 Milligram.	.00003527394	.00000220462	1.	.001	.015432349	.0006430145	.000032150727	.00000267922725
1 Centigram.	.0003527394	.0000220462	10.	.01	.15432349	.006430145	.00032150727	.0000267922725
1 Decigram.	.003527394	.000220462	100.	.1	1.5432349	.06430145	.0032150727	.000267922725
1 Gram.	.03527394	.00220462	1000.	1.	15.432349	.6430145	.032150727	.00267922725
1 Decagram.	.3527394	.0220462	10000.	10.	154.32349	6.430145	.32150727	.0267922725
1 Hectogram.	3.527394	.220462	100000.	100.	1543.2349	64.30145	3.2150727	.267922725
1 Kilogram.	35.27394	2.20462	1000000.	1000.	15432.349	643.0145	32.150727	2.67922725
1 Troy Grain.	.00228571	.000142857	64.79897	.06479897	1.	.041666	.0020833	.000173611
1 Troy Dwt.	.0548571	.0034285	1555.1754	1.5551754	24.	1.	.05	.0041666
1 Troy Ounce.	1.0971428	.0685714	31103.495	31.103495	480.	20.	1.	.08333333
1 Troy Pound.	13.185714	.822857	373241.9478	373.2419478	5760.	240.	12.	1.
1 Assay Ton.	1.0238232	.....	29.1666666	.....	.....	.....	.....	.....

Table to Convert U. S. Linear Measure Into Metric Linear Measure.

As one inch is equal to 0.0254 meters; to convert:

Inches.....	into	meters.....	multiply by	0.0254
"	"	centimeters.....	" "	2.5399
"	"	millimeters.....	" "	25.3997

Table to Convert Metric Linear Measure Into U. S. Linear Measure.

As one meter is equal to 39.370 inches; to convert:

Meters.....	into	Inches.....	multiply by	39.370
Centimeters.....	"	"	" "	0.3937
Millimeters.....	"	"	" "	0.03937

Cubic Measure, U. S. Standard.

1,728 cubic inches = 1 cubic foot.

46,656 cubic inches = 27 cubic feet = 1 cubic yard.

A cubic foot of water weighs 62½ pounds, and contains 1,728 cubic inches, or 7½ gallons.

Square Measure, U. S. Standard.

Inches	Foot		
144 =	1.	Yard	
1296 =	9. =	1.	Perch
39204 =	272.25 =	30.25 =	1
1568160 =	10890. =	1210. =	40 Acre
6272640 =	43560. =	4840. =	160 = 1

Square Measure, Metric.

Sq. Meters	U. S. Sq. In.	Sq. Feet	Sq. Yards	Acres
1 Sq. Centimeter =	.0001 =	.155		
1 Sq. Decimeter =	.01 =	15.5 =	.10764 =	.00024 = .00024
1 Centiare..... =	1. =	1550.03 =	10.764 =	1.196 = .0247
1 Are..... =	100. =	155003. =	1076.4 =	119.6 = .247
1 Hectare..... =	10000. =	..... =	107641. =	11960. = 2.47

Metric, or French Dry and Liquid Measure.

Litres.	U. S. Cu. Ins.	U. S.
1 Millilitre .....	.001 = .061 = {	.00845 gill.
		.0018 pint (dry).
1 Centilitre .....	.01 = .61 = {	.0845 gill.
		.018 pint (dry).
1 Decilitre .....	.1 = 6.1 = {	.845 gill = .2113 pints.
		.18 pint (dry).
1 Litre	1. = 61.02 = {	2.113 pints = 1.056 quarts.
		1.8 pints = .908 q. = .1135 p
1 Decalitre	10. = 610.16 = {	2.641 gallons.
		9.08 q. = 1.135 p. = .283 b.
1 Hectolitre	100. = 3.531 = {	26.417 gallons.
		2.837 bushels.
1 Kilolitre	1000. = 35.31 = {	264.17 gallons.
		28.378 bushels.
1 Myrialitre	10000. = 353.1 = {	2641.7 gallons.
		283.7 bushels.

Thermometer Scales

Celsius or Centigrade symbol, "C." Fahrenheit symbol, "F." Reaumur symbol, "R."

The zero of the Scales of Reaumur and Centigrade is freezing point of water, marked in each case 0° , while the intervening space, up to the boiling point of water, is divided in the former case into 80° , and in the latter to 100° .

In the Fahrenheit Scale the freezing point is represented by 32° and the boiling point is represented by 212° , the intervening space being divided into 180° , which admits of extension above and below the points named, a good thermometer being available for temperature up to 620° Fahrenheit.

The use of the Reaumur Scale is confined exclusively to Germany and Russia, while the Centigrade Scale is used throughout the rest of Europe. The Fahrenheit Scale is confined to England and her colonies and the United States of America.

A variety of circumstances arise in which it becomes necessary to convert readings from one scale into those of the others, in which case the following rules are to be observed:

1. To convert Centigrade degrees into degrees of Fahrenheit, multiply by 9, divide the product by 5 and add 32.
2. To convert Fahrenheit degrees into degrees of Centigrade, subtract 32, multiply by 5 and divide by 9.
3. To convert Reaumur degrees into degrees of Fahrenheit, multiply by 9, divide by 4 and add 32.
4. To convert Fahrenheit degrees into degrees of Reaumur, subtract 32, multiply by 4 and divide by 9.
5. To convert Reaumur degrees into degrees of Centigrade, multiply by 5 and divide by 4.
6. To convert Centigrade degrees into degrees of Reaumur, multiply by 4 and divide by 5.

Reference Tables

Table for Estimating the Value of Silver Per Troy Ounce at Different Degrees of Fineness, Based \$0.50 Per Ounce 1000 Fine.

U. S. CURRENCY.

To find the present market value of silver at any given time, add 2% for every 1c above 50c. Example: To estimate the value of 1 ounce of silver 750 fine, presuming the market value of silver is 63c per ounce for silver 1000 fine, which is 13 cents, or 26% above the computed value in table below, thus: One ounce of silver 750 fine is worth $37\frac{1}{2}c + 26\% = 47\frac{1}{4}c$.

Fine.	\$	Cents.	Fine.	$	Cents.	Fine.	$	Cents.	Fine.	$	Cents.
10		00.50	260		13	510		25.50	760		38
20		01	270		13.50	520		26	770		38.50
30		01.50	280		14	530		26.50	780		39
40		02	290		14.50	540		27	790		39.50
50		02.50	300		15	550		27.50	800		40
60		03	310		15.50	560		28	810		40.50
70		03.50	320		16	570		28.50	820		41
80		04	330		16.50	580		29	830		41.50
90		04.50	340		17	590		29.50	840		42
100		05	350		17.50	600		30	850		42.50
110		05.50	360		18	610		30.50	860		43
120		06	370		18.50	620		31	870		43.50
130		06.50	380		19	630		31.50	880		44
140		07	390		19.50	640		32	890		44.50
150		07.50	400		20	650		32.50	900		45
160		08	410		20.50	660		33	910		45.50
170		08.50	420		21	670		33.50	920		46
180		09	430		21.50	680		34	930		46.50
190		09.50	440		22	690		34.50	940		47
200		10	450		22.50	700		35	950		47.50
210		10.50	460		23	710		35.50	960		48
220		11	470		23.50	720		36	970		48.50
230		11.50	480		24	730		36.50	980		49
240		12	490		24.50	740		37	990		49.50
250		12.50	500		25	750		37.50	1000		50

THE DENVER FIRE CLAY COMPANY.

Reference Tables

**The Value of Gold Per Troy Ounce at Different Degrees of Fineness, Based on
\$20.6718 Per Ounce for 1000 Fine.**

U. S. CURRENCY.

Fine.	\$	Cents.	Fine.	$	Cents.	Fine.	$	Cents.	Fine.	$	Cents.
10		20.67	260	5	37.47	510	10	54.26	760	15	71.06
20		41.34	270	5	58.14	520	10	74.94	770	15	91.73
30		62.02	280	5	78.81	530	10	95.61	780	16	12.40
40		82.69	290	5	99.48	540	11	16.28	790	16	33.07
50	1	03.36	300	6	20.16	550	11	36.95	800	16	53.75
60	1	24.03	310	6	40.83	560	11	57.62	810	16	74.42
70	1	44.70	320	6	61.50	570	11	78.29	820	16	95.09
80	1	65.37	330	6	82.17	580	11	98.97	830	17	15.76
90	1	86.05	340	7	02.84	590	12	19.64	840	17	36.43
100	2	06.72	350	7	23.51	600	12	40.31	850	17	57.11
110	2	27.39	360	7	44.19	610	12	60.98	860	17	77.78
120	2	48.06	370	7	64.86	620	12	81.65	870	17	98.45
130	2	68.73	380	7	85.53	630	13	02.33	880	18	19.12
140	2	89.41	390	8	06.20	640	13	23.00	890	18	89.79
150	3	10.08	400	8	26.87	650	13	43.67	900	18	60.46
160	3	30.75	410	8	47.55	660	13	64.34	910	18	81.14
170	3	51.42	420	8	68.22	670	13	85.01	920	19	01.81
180	3	72.09	430	8	88.89	680	14	05.68	930	19	22.48
190	3	92.76	440	9	09.56	690	14	26.36	940	19	43.15
200	4	13.44	450	9	30.23	700	14	47.03	950	19	63.82
210	4	34.11	460	9	50.90	710	14	67.70	960	19	84.50
220	4	54.78	470	9	71.58	720	14	88.37	970	20	05.17
230	4	75.45	480	9	92.25	730	15	09.04	980	20	25.84
240	4	96.12	490	10	12.92	740	15	29.72	990	20	46.51
250	5	16.80	500	10	33.59	750	15	50.39	1000	20	67.18

WHY ONE OUNCE OF FINE GOLD IS WORTH \$20.67.

One dollar in gold coin weighs..... 25.8 grains Troy
Ten per cent. is alloy (copper)..... 2.58 " "

Therefore the weight of pure gold in a gold dollar is..... 23.22 " "

There are 480 grains in a Troy ounce. Therefore $480 \div 23.22 = 20.67$, or the value per Troy ounce is \$20.67.

As an example: \$800.00 in gold coin weighs 43 ozs. Troy; 90 per cent. is fine gold, or 38.7 ounces; \$800.00 divided by 38.7 gives a value of \$20.67 per ounce.

How the Ratio of 16 to 1 is Determined.

One silver dollar (by law of U. S. 90 parts silver and 10 parts copper) weighs 412½ grains; \$12.80 in silver coin weighs 11 ounces Troy or one ounce is worth \$1.29+.

$$\$20.67 \div \$1.29+ = 16:1.$$

(Taken from Richard W. Lodge's "Notes on Assaying.")

Reference Tables

Gramme Table, for the Assay of Cyanide Solutions.

If $\frac{1}{2}$ Pint of Solution gives of Fine Metal	One Ton of Solution will give Fine Metal			If $\frac{1}{2}$ Pint of Solution gives of Fine Metal	One Ton of Solution will give Fine Metal		
	Ozs.	Dwts.	Grs.		Ozs.	Dwts.	Grs.
Gramme				Gramme			
.0001	0	0	5.5	.0200	2	.5	20
.0002	0	0	11	.0300	3	8	18
.0003	0	0	16.5	.0400	4	11	16
.0004	0	0	22	.0500	5	14	14
.0005	0	1	3.5	.0600	6	17	12
.0006	0	1	9	.0700	8	0	10
.0007	0	1	14.5	.0800	9	3	8
.0008	0	1	20	.0900	10	6	6
.0009	0	2	1.5	.1000	11	9	4
.0010	0	2	7	.2000	22	18	8
.0020	0	4	14	.3000	34	7	12
.0030	0	6	21	.4000	45	16	16
.0040	0	9	4	.5000	57	5	20
.0050	0	11	11	.6000	68	15	0
.0060	0	13	18	.7000	80	4	4
.0070	0	16	1	.8000	91	13	8
.0080	0	18	8	.9000	103	2	12
.0090	1	0	15	1.0000	114	11	16
.0100	1	2	22	2.0000	229	3	8

Grain Table, for the Assay of Cyanide Solutions.

If $\frac{1}{2}$ Pint of Solution gives of Fine Metal	One Ton of Solution will give Fine Metal			If $\frac{1}{2}$ Pint of Solution gives of Fine Metal	One Ton of Solution will give Fine Metal		
	Ozs.	Dwts.	Grs.	Grains	Ozs.	Dwts.	Grs.
Grains				Grains			
.001	0	0	3.5	.060	0	8	23
.002	0	0	7	.070	0	10	11
.003	0	0	11	.080	0	11	23
.004	0	0	14.5	.090	0	13	10
.005	0	0	18	.100	0	14	22
.006	0	0	21.5	.200	1	9	20
.007	0	1	1	.300	2	4	19
.008	0	1	4.5	.400	2	19	.16
.009	0	1	8	.500	3	14	14
.010	0	1	12	.600	4	9	12
.020	0	3	0	.700	5	4	10
.030	0	4	12	.800	5	19	8
.040	0	6	0	.900	6	14	6
.050	0	7	11	1.000	7	9	4

In case of accident from Cyanide Poisoning, the following remedies are recommended: Put the patient into a hot bath, and apply cold water to his back and neck. In cases of internal poisoning, vomiting should be induced by emetics, or by physical means.

Freshly precipitated Carbonate of Iron, obtained by mixing equal quantities of Sodium Carbonate and Ferrous Sulphate, is recommended for internal use.

If the poisoning is the result of inhaling Prussian Acid Gas, it is advisable to make the patient inhale a small quantity of Chlorine Gas, Ammonia or Ether. The Chlorine Gas can be quickly made and applied by sprinkling a little Bleaching Powder on a piece of flannel moistened with Acetic Acid, and then holding the flannel to the nostrils of the patient.

THE DENVER FIRE CLAY COMPANY.

Constants of the Elements.

Oxygen = 16.

Name	Sym.	Atomic Weight	Deg. C Melting Pt.	Sp. Gr.	Valence	
Aluminum....	Al	27.1	700	2.58	3	Tin-white metal.
Antimony....	Sb	120.2	432	6.7	3, 5	Bluish-white, brittle metal.
Argon.....	A	39.9	.....	.....	.....	Colorless, odorless gas.
Arsenic.....	As	75.0	.....	5.73	3, 5	Crystalline solid. Volatilizes at 450° C.
Barium.....	Ba	137.4	1200	3.75	2	White metal.
Beryllium....	Be	9.08	950?	1.85	2	Steel-colored, hard crystals.
Bismuth.....	Bi	208.5	268	9.75	3, 5	Reddish-white metal.
Boron.....	B	11.0	2000+	2.53	3	Red-brown powder, infusible at white heat.
Bromine.....	Br	79.96	-7.2	3.19	1, 5	Brown-red liquid. Suffocating odor.
Cadmium....	Cd	112.4	320	8.67	2	Malleable, ductile, crystalline metal.
Caesium....	Cs	132.9	26	1.88	1	Silver-white, ductile metal.
Calcium....	Ca	40.1	Med.	1.7	2	Pale yellow metal.
Carbon.....	C	12.0	?	2-3.5	4	Practically infusible. Diamond, graphite.
Cerium.....	Ce	140.25	850	6.63	3, 4	Steel gray. Burns in Cl.
Chlorine....	Cl	35.45	-33.6	.....	1, 3-7	Greenish-yellow gas.
Chromium....	Cr	52.1	1775+	6.81	2, 3, 6	Light green powder.
Cobalt.....	Co	59.0	1500	8.96	2, 3	Harder than iron, malleable, ductile.
Copper.....	Cu	63.3	1054	8.91	1, 2	Red, malleable, ductile metal.
Didymium....	Di	142.12	900?	6.54	3	White, ductile metal.
Erbium.....	Er	166.0	?	.....	3	Not isolated.
Flourine....	F	19.0	.....	.....	1	Colorless gas.
Gallium....	Ga	70.0	30	5.95	3	Gray, soft metal.
Germanium....	Ge	72.5	900	5.47	2, 4	White, brittle metal.
Gold.....	Au	197.2	1045	19.3	1, 3	Soft, yellow, malleable, ductile metal.
Hydrogen....	H	1.008	.....	0.069	1	Colorless gas.
Iridium....	Ir	193.0	1950	22.42	3, 4	Hard, white, lustrous mass.
Iron.....	Fe	55.9	1550‡	7.85	2, 3	Gray metal.
Indium.....	In	115.0	176	7.20	3	White non-crystalline metal.
Iodine.....	I	126.97	114	4.95	1, 5, 7	Dark, iron-gray solid.
Lanthanum..	La	138.9	870	6.16	3	Iron-gray, malleable, ductile metal
Lead.....	Pb	206.9	326	11.37	[2, 4	Bluish-white metal.
Lithium....	Li	7.03	180	0.59	1	Gray metal.
Magnesium....	Mg	24.36	500	1.75	2	White malleable metal.
Manganese ..	Mn	55.0	1800	7.15	2,3,4,6,7	Gray, brittle metal.
Mercury....	Hg	200.0	-38.8	13.59	1, 2	Silvery-white liquid metal.
Molybdenum....	Mo	96.0	1775+	8.56	2,3,4,6	White, brittle metal.
Nickel.....	Ni	58.7	1450	8.90	2, 3	White, hard, ductile, malleable metal.
Niobium....	Nb	93.81	?	7.06	5	Steel-gray lustrous metal.
Nitrogen....	N	14.04	.....	.....	1-5	Colorless, odorless gas.
Norwegium....	Ng	218.92	254	.....	.....	Reddish-white metal.
Osmium.....	Os	191.0	.....	22.48	2-8	Lustrous, blue-white metal.
Oxygen.....	O	16.00	.....	1.10	2	Colorless, odorless gas.
Palladium....	Pd	106.5	1360	11.4	2, 4	White, malleable, ductile metal.
Phosphorous....	P	31.0	45	1.81	3, 5	Transparent solid, also red.
Platinum....	Pt	194.8	1775	21.48	2, 4	White, malleable, ductile metal.
Potassium....	K	39.15	63	0.87	1	White, soft metal.
Rhodium....	Rh	103.0	2000	12.1	2, 3, 4	Very hard, white metal.
Radium....	Ra	225.0	?	.....	.....	.....

Constants of the Elements—(Cont.)

Name	Sym.	Atomic Weight	Deg. C. Melting Pt.	Sp. Gr.	Valence	
Ruthenium	Ru	101.7	2000	11.	2—8	White, lustrous, heavy, brittle metal.
Rubidium	Rb	85.5	38	1.52	1	Wax-like lustrous metal.
Samarium	Sm	150.0	.....	.....	.....	Not isolated.
Scandium	Sc	44.1	.....	.....	.....	Not isolated.
Selenium	Se	79.2	217	4.6	2, 4	Amorphous and crystalline solid.
Silicon	Si	28.4	1200	2.0	4	Amorphous, graphoidal, adamantine.
Silver	Ag	107.93	954	10.51	1	Whitest of all metals.
Sodium	Na	23.05	96.	0.97	1	Whitish, soft metal.
Strontium	Sr	87.6	?	2.4	2	Brass-yellow, malleable metal.
Sulphur	S	32.06	114	2.03	2, 4, 6	Yellow, brittle metal.
Tantalum	Ta	183.0	?	10.78	5	Black powder, metallic lustre.
Tellurium	Te	127.6	455	6.24	2, 4	Amorphous and crystalline solid.
Terbium	Tr	160.0	? . . . .	.....	3	Not isolated.
Thallium	Tl	204.1	294	11.8	1, 3	Bluish-white metal.
Thorium	Th	232.5	?	11.0	4	Grayish-white powder.
Tin	Sn	119.0	233	7.29	2, 4	Lustrous white metal.
Titanium	Ti	48.1	? . . . .	.....	3, 4	Black, lustrous powder.
Tungsten	Wo	184.0	?	19.13	2—6	Steel-gray, crystalline powder.
Uranium	U	238.5	Med.	18.68	4, 6	Grayish-white metal.
Vanadium	V	51.2	?	5.5	2—5	Light gray lustrous powder.
Ytterbium	Yb	173.0	? . . . .	.....	3	Has not been isolated.
Yttrium	Y	89.0	? . . . .	.....	3	Dark gray powder.
Zinc	Zn	65.4	419	7.14	2	Bluish-white metal.
Zirconium	Zr	90.5	? . . . .	.....	4	Black powder and grayish solid

Freezing, Fusing, and Boiling Points.

Substances	Fahrenheit Degrees	Centigrade Degrees	Reaumur Degrees
Bromine freezes at	— 7.6	—22	—17.6
Olive oil freezes at	50	10	8
Quicksilver freezes at	—39	—39.4	—31.5
Water freezes at	32	0	0
Bismuth metal fuses at	507	264	211
Copper fuses at	2200	1204	963
Gold fuses at	2518	1380	1105
Iron fuses at	2800	1538	1230
Lead fuses at	617	325	260
Potassium fuses at	144.5	62.5	50
Silver fuses at	1832	1000	800
Sodium fuses at	204	95.6	76.5
Sulphur fuses at	239	115	92
Tin fuses at	442	228	182
Zinc fuses at	773	412	329.6
Alcohol boils at	167	74.4	63
Bromine boils at	145	63	50
Ether boils at	96	35.5	28.4
Iodine boils at	347	175	140
Water boils at	212	100	80

THE DENVER FIRE CLAY COMPANY.

Specific Gravity.

Name of Substance	Specific Gravity	Name of Substance	Specific Gravity
Metals			
Platinum, rolled.....	22.009	Salt, common.....	2.130
Gold, 22 carats fine.....	17.486	Saltpetre.....	2.090
Lead, pure.....	11.330	Sulphur, native.....	2.033
Silver, pure.....	10.474	Common Soil.....	1.984
Copper, wire and rolled.....	8.878	Clay.....	1.900
Copper, pure.....	8.788	Brick.....	2.000
Bronze, gun metal.....	8.500	Sand.....	2.650
Brass, common.....	8.500	Lime, quick.....	1.500
Steel, cast steel.....	7.919	Charcoal.....	.441
Steel, common soft.....	7.833	Liquids	
Steel, hardened and tempered.....	7.818	Alcohol, pure.....	.792
Iron, pure.....	7.768	Oil, linseed.....	.940
Iron, wrought and rolled.....	7.780	Oil, turpentine.....	.870
Iron, hammered.....	7.789	Water, distilled (62.425 lbs. per cu. ft.).....	1.000
Iron, cast.....	7.207	Water, sea.....	1.030
Tin, English.....	7.201	Gases and Vapors	
Zinc, rolled.....	7.101	Ammonia Gas.....	.5894
Antimony.....	6.712	Carbonic acid.....	1.5201
Stones and Earth			
Glass, flint.....	3.500	Light carbureted hydrogen.....	.5527
Glass, bottle.....	2.732	Oxygen.....	1.1056
Marble, common.....	2.686	Sulphureted hydrogen.....	1.1747
Slate.....	2.800	Steam at 212° F.....	.4880
Stone, common.....	2.520		

The specific gravity of a body is the ratio between its weight and the weight of a like volume of distilled water at a temperature of 39.2° F. For gases, air is taken as the unit. One cubic foot of water at 39.2° F. weighs 62.425 pounds.

CORRECT NAMES FOR SOME OF THE MORE COMMON CHEMICALS.

Aqua Fortis	Nitric Acid
Aqua Regia	Nitric and Muriatic Acids
Baryta	Barium Oxide
Barytes	Barium Sulphate
Blue Stone, Blue Vitriol	Copper Sulphate
Borax	Sodium Borate
Brimstone	Sulphur
Butter of Antimony	Antimonious Chloride
Calomel	Mercurous Chloride
Chalk	Calcium Carbonate
Copperas, Green Vitriol	Iron Sulphate
Corrosive Sublimate	Mercuric Chloride
Cream of Tartar	Potassium Bitartrate
Epsom Salts	Magnesium Sulphate
Fowler's Solution	Potassium Arsenite
Glauber's Salts	Sodium Sulphate
Gypsum	Calcium Sulphate
Horn Silver	Silver Chloride
Hartshorn	Ammonia Water
Hypo	Sodium Hyposulphite
Laughing Gas	Nitrous Oxide
Lime	Calcium Oxide
Lime Water	Calcium Hydrate
Litharge	Lead Oxide
Lunar Caustic	Silver Nitrate
Liver of Sulphur	Potassium Sulphide
Magnesia	Magnesium Oxide
Meerschaum	Magnesium Silicate

Mosaic Gold	Tin Bisulphide
Nitre	Sodium Nitrate
Nitre-Cake	Sodium Bisulphate
Oil of Vitriol	Sulphuric Acid
Prussian Blue	Ferric Ferro-Cyanide
Prussic Acid	Hydrocyanic Acid
Pyro	Pyrogallic Acid
Quicksilver	Mercury
Red Lead	Lead Oxide
Red Precipitate	Red Mercuric Oxide
Rochelle Salts	Potassium and Sodium Tartrate
Salt (common)	Sodium Chloride
Saltpetre	Potassium Nitrate
Salt Cake	Sodium Sulphate
Sal-Ammoniac	Ammonium Chloride
Sal-Soda	Sodium Carbonate, Cryst.
Sal-Volatile	Ammonium Bicarbonate
Soda Ash	Sodium Carbonate
Spirits of Salt	Muriatic Acid
Sugar of Lead	Lead Acetate
Tartar-Emetic	Antimony and Potassium Tartrate
Verdigris	Copper Sub-Acetate
Vinegar	Acetic Acid
Water Glass	Sodium Silicate
White Lead	Lead Carbonate
White Precipitate	Mercuric-Ammonium Chloride
White Vitriol	Zinc Sulphate
White Zinc	Zinc Oxide

PACKAGES—ACIDS.

Commercial acids are shipped in the following packages:

Sulphuric 66° Be.....	Tank Cars, Drums and Carboys
Nitric acid Commercial	Carboys
Muriatic acid Commercial.....	Wooden Tank Cars, Carboys
Mixed acids or powder acids.....	Tank Cars, Drums and Carboys
Ammonia	Tank Cars, Drums and Carboys

All chemically pure acids and ammonia are shipped in glass. 5 Pint Bottles and 1 lb. Bottles and Carboys.

5 Pint Bottle of C. P. Sulphuric Acid contains 9 lbs.

5 Pint Bottle of C. P. Nitric acid contains 7 lbs.

5 Pint Bottle of C. P. Hydrochloric acid contains 6 lbs.

5 Pint Bottle of C. P. Ammonia contains 4½ lbs.

All 5-pint bottles are packed neatly and securely in a barrel, 16 bottles to the barrel, weighing as follows:

	Net weight of contents.	Approx. Shipping weight.
Sulphuric acid	144 lbs.	220 lbs.
Nitric acid	112 lbs.	190 lbs.
Hydrochloric acid	96 lbs.	175 lbs.
Ammonia	72 lbs.	150 lbs.

Carboys as follows:

Sulphuric acid, C. P.	200 lbs.	260 lbs.
Nitric acid, C. P.	155 lbs.	215 lbs.
Hydrochloric acid, C. P.	125 lbs.	185 lbs.
Ammonia, C. P.	100 lbs.	160 lbs.

Commercial acids and ammonia in carboys weigh approximately the same as C. P. acids.

Sulphuric acid 66° Be. is shipped in tank cars of a capacity of 30,000 to 65,000 pounds.

Sulphuric acid 60° Be. shipped in tank cars with a capacity of 60,000 pounds.

Sulphuric acid 66° Be. shipped in drums weighing 1,600 lbs. net.

THE DENVER FIRE CLAY COMPANY.

Carboys are charged at \$2.00 each, acid drums at \$8.00 each, aqua ammonia drums at \$10.00 each, all returnable at the same price (if in good condition), less freight to Denver or Salt Lake City.

Carboys not bearing our brand are returnable at \$1.00 each provided both carboy and box are in good condition when received.

Five pint bottles are not returnable under any circumstances, as we prefer to use new bottles exclusively for our C. P. goods.

Aqua ammonia may be had in the following packages:

Iron drums, holding about 750 pounds net.

Carboys, holding about 100 pounds net.

Bottles, holding 5 pts. 4½ pounds net.

CARE OF PACKAGES.

When drums are emptied always see that the plugs are greased before replacing, so as to avoid air or water entering the drum. Always keep them under cover and in a dry place; even moisture coming in contact with acid drums sometimes causes their ruin.

Carboys should not be exposed to the action of the sun or rain, as by prolonged exposure the box would become worthless and would have to be re-packed.

When returning empty packages always place a tag on them, sending us bill of lading so we may know from whom they come, and avoid mistakes.

Keep all carboys of nitric acid out of the sun and in a cool place, as heat expands the acid, and it is liable to run over the top and set fire to the carboy box.

Do not lay barrels of C. P. acids on their side, or set them wrong end up, as this will almost invariably cause them to leak, entailing a loss of acid, and in the case of nitric acid will set fire to the barrel and packing.

In the event of fire occurring from the action of nitric acid upon straw or other carbonaceous matter, be very careful not to inhale the fumes arising, as serious consequences might ensue, several deaths having occurred from this cause. The nitric acid fumes alone are practically harmless; the danger appears to be only when coming in contact with the material which takes fire.

RETURNING EMPTY CYLINDERS.

Please oblige us, and indirectly the trade as well, by returning all empty cylinders promptly, declaring same on way bills as "Empty Iron Drums Returned," and mailing us the bill of lading with the package number entered therein.

IF IMPURITIES ARE SUSPECTED IN C. P. ACIDS TESTS FOR SAME ARE AS FOLLOWS:

Hydrochloric Acid.

FOR IRON.—Dilute, and add KSCN; if it shows a red color there is iron present.

FOR ARSENIC.—Dilute, pass in hydrogen sulphide gas; if a distinct yellow precipitate is obtained it would indicate traces of arsenic; also try by the Marsh test.

FOR SULPHURIC ACID.—Dilute, add barium chloride; a white precipitate would be obtained if sulphuric acid were present.

Nitric Acid.

FOR CHLORINE.—Add silver nitrate; if slight opalescence occurs, it shows presence of chlorine.

Sulphuric Acid.

FOR ARSENIC.—Dilute and pass in hydrogen sulphide gas; if a distinct yellow precipitate is the result it shows the presence of arsenic; also try by the Marsh test.

FOR IRON.—Dilute, add KSCN; if red color appears it shows presence of iron.

In making these tests extreme care should be taken that all of the glassware and apparatus used in the tests are absolutely free from the impurity tested for; also make tests on the distilled water to be used in the examination, so as to be sure the water is perfectly pure.

ANTIDOTES FOR POISONS.

First.—Send for a physician.

Second.—Induce vomiting, by tickling throat with feather or finger; drinking hot water or strong mustard and water. Swallow sweet oil or whites of eggs.

Acids are antidotes for **Alkalies**, and vice versa.

SPECIAL POISONS AND ANTIDOTES.

Acids—Muriatic, Oxalic, Acetic, Sulphuric (Oil of Vitriol), Nitric, (Aqua Fortis). Soap-suds, magnesia, lime-water.

Prussic Acid. Ammonia in water; dash water in face; give solution cobalt nitrate.

Carbolic Acid. Flour and water, mucilaginous drinks.

Alkalies—Potash, Lye, Hartshorn, Ammonia. Use vinegar or lemon juice in water.

Arsenic—Rat Poison, Paris Green. Use milk, raw eggs, sweet oil, lime-water, flour and water.

Bug Poison—Lead, Saltpetre, Corrosive Sublimate, Sugar of Lead, Blue Vitriol. Use white of eggs or milk in large quantities.

Chloroform—Chloral, Ether. Dash cold water on head and chest; artificial respiration.

Carbonate of Soda—Copperas, Cobalt. Use soap-suds and mucilaginous drinks.

Iodine—Antimony, Tartar Emetic. Use starch and water astringent infusions; strong tea.

Mercury and its Salts. Use whites of eggs, milk mucilages.

Opium—Morphine, Laudanum, Paregoric, Soothing Powders or Syrups. Use strong coffee, hot bath; keep awake and moving at any cost.

We make a specialty
of duty-free importa-
tions for Schools, Col-
leges and Universities

THE DENVER FIRE CLAY COMPANY.

TELEGRAPHIC CODE.

In addition to code shown below, we use the Western Union Telegraph Code.
(Universal Edition and A. B. C. Code.)

CORRESPONDENCE.

Orders and Shipments.

Efacist....	Ship immediately.	Eberring....	We will ship.
Ebacot....	Ship soon as possible.	Ebetted....	We will make shipment.
Ebactor....	Ship by rail.	Ebhor.....	We will complete.
Ebaisser....	Ship by express.	Ebidance...	We expect to ship.
Ebangas....	Ship by quickest route.	Ebider....	We have shipped.
Ebapo.....	Can you ship?	Ebiding....	We have not shipped.
Ebase.....	When will you ship?	Ebin.....	Sight draft attached to bill of lading.
Ebatage....	Have you shipped?	Ebject.....	We can ship.
Ebater....	If not, when will you ship?	Eblaze.....	We cannot ship.
Ebatido....	Our order of the—.	Eblemar....	We have ready for shipment.
Ebatude....	Enter our order for—.	Eblepsy....	Shall we ship what we have ready?
Ebbacy....	Specifications to follow.	Eblette.....	We have no—but will.
Ebbess....	Hasten shipment of—.	Eblude.....	Ship other sizes promptly.
Ebbey....	We are entirely out of—.	Ebluent....	We cannot promise definitely.
Ebbott....	We must have.	Ebode.....	We have been disappointed in delivery of.
Ebceder....	Ship what you have ready and let balance follow soon as possible.	Eboding....	We have entered order.
Ebdals....	If you cannot ship in time named, advise us by telegraph.	Ebolie.....	Shall we enter order?
Ebdomen...	Send tracer for shipment.	Ebondie....	We are now loading.
Ebduse....	We cannot use.	Ebound....	Your order of the—.
Ebed.....	Do not want.	Eboutir....	Will promise to ship in—.
Ebenot....	Do not substitute.	Ebrade....	Can you use?
Ebenson....	You can substitute.	Ebrazar....	Do you want?
		Ebreyer....	Can we substitute?

STOCK.

Questions.

Ebridge....	How soon could you furnish?	Ebscess....	Could you furnish within—?
Ebriter....	How soon and at what price could you furnish?	Ebscind....	If so, enter order.
Ebrupt....	Have you in stock and could you furnish at once?	Ebsist....	If not how soon could you furnish?

Answers.

Ebsolve....	We have in stock.	Ebstract....	We could ship in—.
Ebsorb....	We have in stock and could ship at once.	Ebstruse...	We have none in stock.
Ebstain....	We could ship.	Ebsume....	We have no—in stock.
Ebsterge...	We could probably ship in—.	Ebsurd....	Cannot promise positively, but think we could ship—.
Ebsterse...	If ordered by telegraph promptly.	Eburega....	On receipt of order.
		Ebusage....	After receipt of order.
		Ebusaid....	If ordered immediately.

PRICES.

Questions.

Ebusing....	At what price could you furnish?	Ebuttal....	Has there been any change in price of—?
Ebusive....	Quote us lowest prices on—.	Ebyss.....	We are offered—.
Ebutment..	Quote lowest prices and best terms on—.	Ecabalar...	Will you hold offer open?
Ebutilon....	What is the price of—?	Eecabit.....	Will you allow us?

The following system may be used for coding numerals, in sending telegrams, for figures that would otherwise require more than one word:

1	2	3	4	5	6	7	8	9	0	Repeat.
c	h	e	m	i	s	t	r	y	x	w



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Estimate of Laboratory Equipment.

Outfits for Assayers and Prospectors.

School Sets of Chemical Apparatus.

Collection of Minerals, Models and Charts.

Scientific Books.

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Fire Brick, Tile and Fire Clay Material.

PART V— - - - - Pages 374 to 411

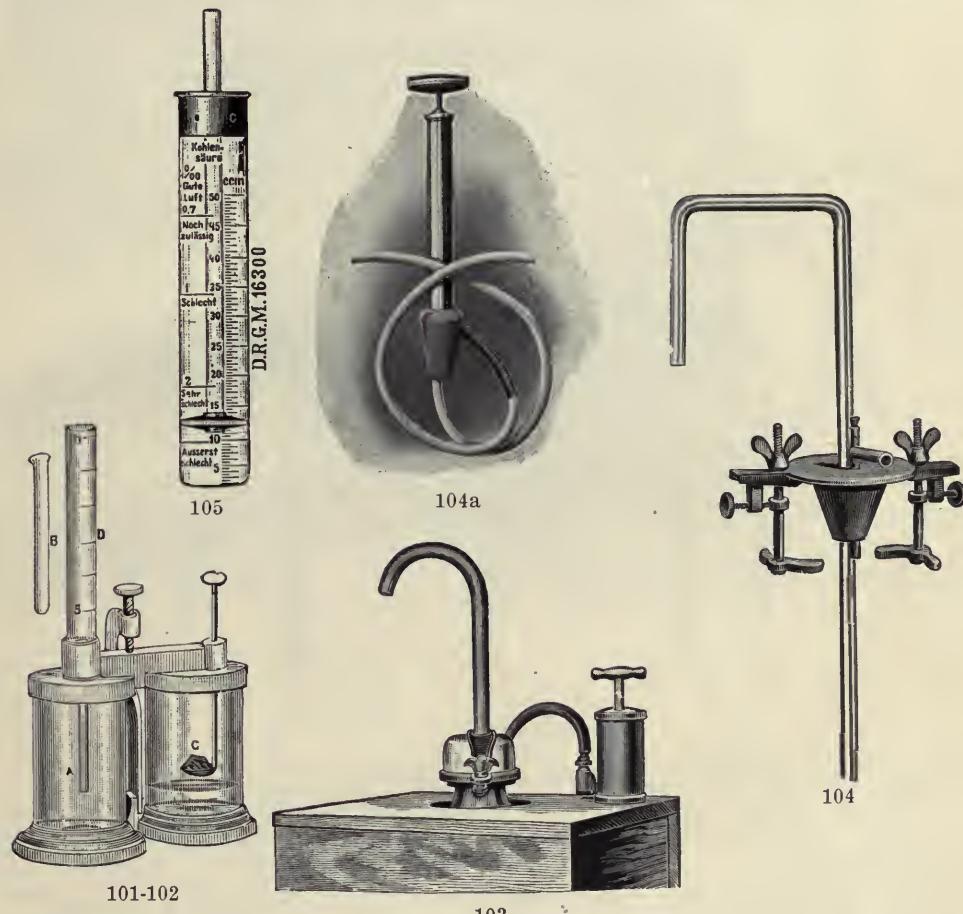
Chemicals and Reagents.

PART VI— - - - - See Special Catalogue.

Physical Apparatus.

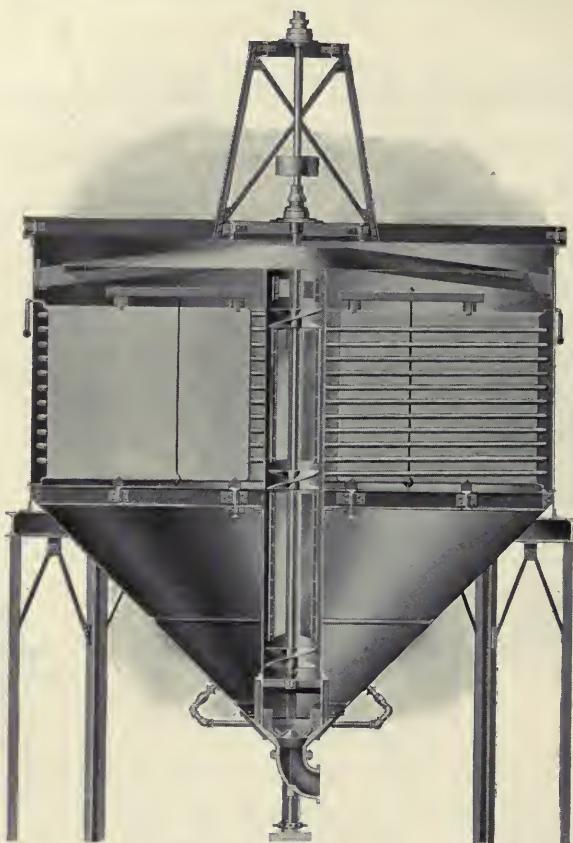
The DENVER FIRE CLAY CO.

Illustrated and Priced Catalogue



No.

101	Acidometer, Twitchell's, for determining the strength of all kinds of vinegar. Directions with each instrument.....	\$12.00
102	Acidometer, Twitchell's, for wine, with directions.....	12.00
103	Acid Pumps, for drawing acids or other liquids from carboys, very substantial and effective, for factory use.....	12.00
104	Acid Pumps, latest form, for laboratory use.....	4.50
	Foot Blower, to operate the same.....	4.00
104a	Acid Pump, improved form, simple and effective.....	6.00
105	Air Tester, Wolpert's, latest construction, pocket instrument, for determining Carbonic Acid in school rooms, factories, mines, etc.....	4.00
106	Alembic Salleron, or Monitor Still, for determining the alcoholic percentage in spirituous liquids, made of copper. see Fig. 2021, complete in box..	10.00



107

HENDRYX 17-INCH COMBINATION AGITATOR AND FILTER.

No. 107. We have placed a large number of this size machine in mills, universities and testing plants.

With this machine, tests can be made to determine how fine an ore must be ground in order to get the best extraction, the time necessary for extraction, the rate of filtration, the effect of different strength of solutions and other important data. Your laboratory or mill is not complete without one of these machines, because it will aid you in determinations for increased recoveries. The capacity of this machine is 25 lbs. of ore and 50 lbs. of solution to a charge.

Shipping weight 100 lbs.

Price without motor \$125.00 Net

We also make a 32-inch diameter Combination Agitator and Filter which treats 300 lbs. of ore and 600 lbs. of solution to a charge.

Weight complete 1,000 lbs.

Price \$300.00 Net



108



109

HENDRYX 17-INCH AGITATOR.

No. 108. This is the most ideal agitator for the purpose of making cyanide tests. The capacity is 20 lbs. of ore and 40 lbs. of solution to the charge. It is provided with a coil of pipe so that the solution may be heated with steam or hot water if desired.

Shipping weight 90 lbs.

Machine Complete	\$80.00 Net
Motor Approximately	25.00 Net

We also furnish a 32-inch diameter agitator for testing purposes which has a capacity of 300 lbs. of ore and 600 lbs. of solution.

Shipping weight 700 lbs.

Price	\$200.00
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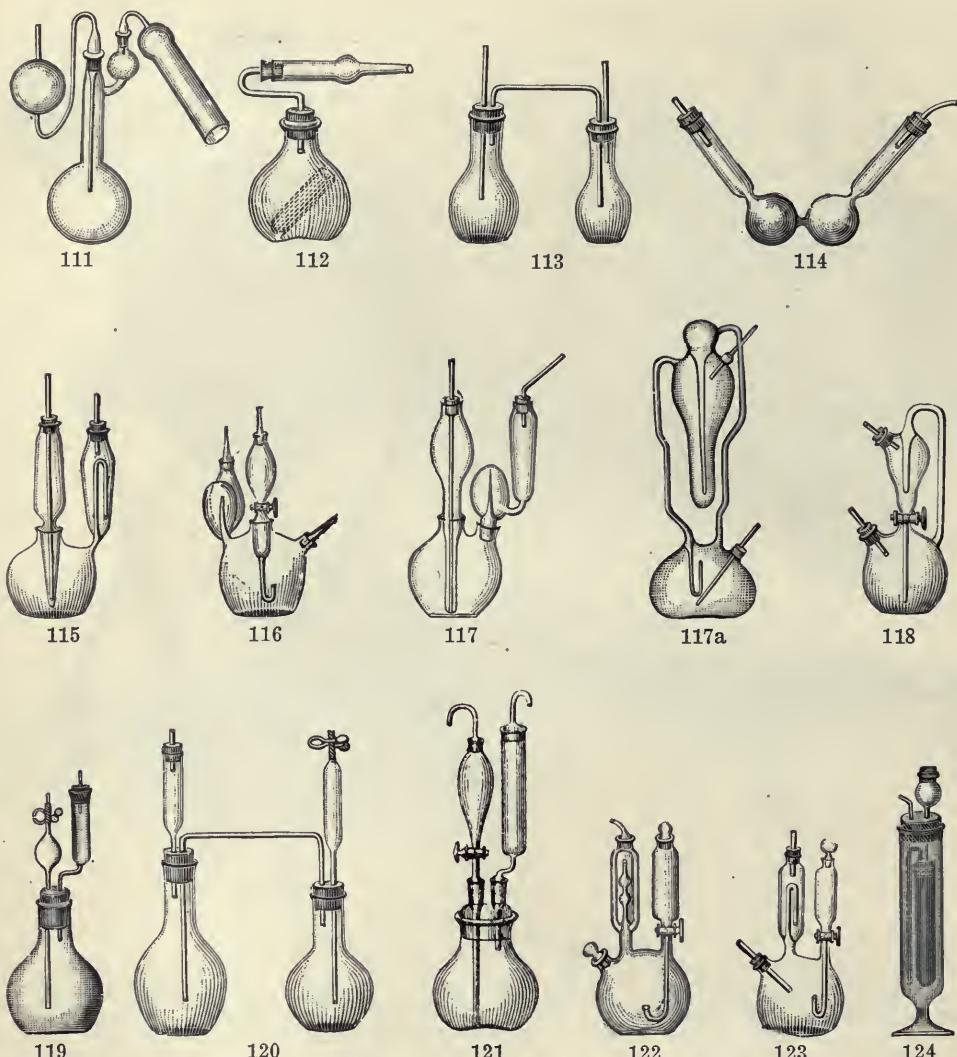
HENDRYX 16-INCH CLAY AGITATOR.

No. 109. This agitator is the same as the 17-inch machine except that all of the parts exposed to the solution are made of wood or vitrified clay so that tests in agitation may be made using acid or alkaline solutions.

This is an excellent apparatus for the testing of oxidized copper ores with acids. The capacity is 20 lbs. of ore and 40 lbs. of solution to a charge.

Shipping weight 100 lbs.

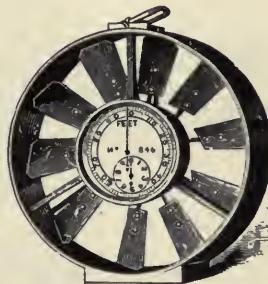
Price	\$100.00 Net
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No.			
111	Alkalimeter, Bunsen's		\$1.00
112	Alkalimeter, Fresenius'60
113	Alkalimeter, Fresenius & Will's45
114	Alkalimeter, Fritsche's, for minerals .....		.50
115	Alkalimeter, Geissler's, with ground joints		1.40
116	Alkalimeter, Geissler's, with stopcock		2.00
117	Alkalimeter, Geissler & Erdmann's		1.50
117a	Alkalimeter, Geissler's, improved form, for one acid		1.75
117b	Alkalimeter, Geissler's, improved form, for two acids		2.00
118	Alkalimeter, Kipp's, with stopcock		1.80
119	Alkalimeter, Mohr's, with pinchcock .....		.75
120	Alkalimeter, Mohr's, for carbonic acid determinations		1.00
121	Alkalimeter, Mohr's, with stopcock		2.50
122	Alkalimeter, Rohrbeck's, with stopcock		1.80
123	Alkalimeter, Schroedter's, with stopcock		1.80
124	Alkalimeter, Schaffner's, on foot .....		.60



130—No. 3111



130—No. 3131



130—No. 3139

No.

130 Anemometers or Air Meters, for the measurement of air currents through mines, tunnels, sewers, etc., and the ventilation of hospitals, schools, public buildings, etc.

No.

3111	Portable Air Meter, 6 dials, reading to 10,000,000 feet.....	\$30.00
	Sand Glass timers attached, extra.....	3.75
3131	Biram's, 4 inches, 2 dials, reading to 1,000 feet.....	25.00
3132	Biram's, 4 inches, 4 dials, reading to 100,000 feet.....	28.00
3139	Biram's, pocket size, 2 dials, reading to 1,000 feet.....	40.00

All the above are complete in case*



131



135



141



142



143

No.

131 Annealing Cups—DENVER FIRE CLAY COMPANY'S own make; made of selected clay; the finest, whitest Annealing Cup made.

Largely used for silica fusions.

No.	0	1	2
Size	1½x1½	1¼x1¼	1½x1½ in.
Doz.	\$1.00	1.00	1.00

132 Annealing Cup Covers. Doz. .25 .25 .25

133 Annealing Cups, Battersea.

No.	A	B	C
Dia.	1½	1¾	1½ in.
Doz.	\$1.05	1.05	1.05

134 Annealing Cup Covers. Doz. .30 .30 .30

Annealing Cups, Porcelain. See Crucibles, Nos. 716 and 718.

135 Annealing Cup Trays, of fire clay; very convenient for handling Annealing Cups while in muffles \$0.75

136 Annealing Cup Trays, of tinned iron, with detachable wood handle, made to hold 12 Porcelain Cups, of either R. B. No. 0 or 00, Cat. No. 716, or R. M. No. 7, Cat. No. 718; can be made to order for other sizes..... 1.25

141 Anvil, Plattner's, 1½x1½ in., for blow pipe work; polished steel..... .50

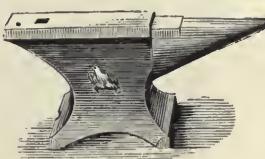
142 Anvil, for Lead Buttons, 6x6 in., planed on one side..... 1.25

143 Anvil, square, solid steel, mirror polished face.

Size	2	2½	3 in. sq.
Each	\$1.30	1.70	2.00



144



145

No.

144 Anvil, square, with point, solid steel, mirror polished face.

Weight	1	2	3	4	6 lbs. 3 in. sq.
Face	1 1/2	1 7/8	2 1/4	2 5/8	
Each	\$0.75	1.25	1.75	2.50	3.50

145 Anvil, regular shape, steel face, for use on table.

Weight	5	10	15	20	30	50 lbs. 8 1/2 in.
Face	4	5	5 1/2	6 1/4	7	
Each	\$2.20	2.75	3.25	4.00	4.75	6.25

151. Asbestos Board, fire and acid proof, in sheets 40x40 in. from 1-16 to $\frac{1}{2}$ in. thick lb. \$0.15
In full sheets lb. .10

Approximate weight per sheet 40x40 in.:

Thickness	1-16	$\frac{1}{8}$	3-16	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$ in.
Weight about	4	8	12	15	25	30 lbs.

151a Asbestos Board, cut in squares, 1-16 in. thick.

Size	4x4	5x5	6x6 in.
Dozen	\$0.20	.30	.40

152 Asbestos Cloth, unaffected by acids, fire, etc.

Size	Fine	Medium	Heavy
1 sq. ft.	3 1/3	4 1/3	9 oz.
Width	36	36	36 in.
Yard	\$4.00	5.00	7.00

153 Asbestos Cord, in 1 lb. balls, valuable for suspending metals, retorts, crucibles, etc., in contact with fire. Dia. $\frac{1}{8}$ in. lb. 1.50
Asbestos Fibre, see Chemical list.
Asbestos Mittens, see Gloves.

154 Asbestos Paper, of pure, white, long fibred asbestos, 36 in. wide, 1 yard weighing 1 lb. lb. .15
In 10 lb. lots lb. .12

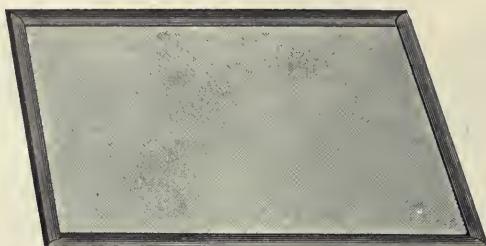
155 Asbestos Wick Packing, in 1 lb. balls lb. .45

156 Asbestos Twine, in 1 lb. balls, dia. 1-16 in. lb. 1.75

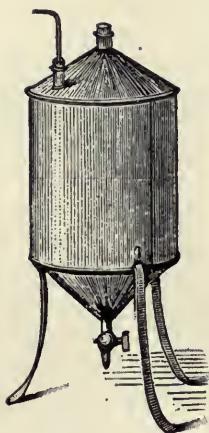
156a Asbestos Sewing Twine, for sewing asbestos cloth, etc., in 1 lb. balls.... lb. 2.25

157 Asbestos Tubes, $\frac{5}{8}$ in. outside, $\frac{3}{8}$ in. inside diameter.

Length	9	10	12	15 in.
Each	\$0.06	.08	.10	.12



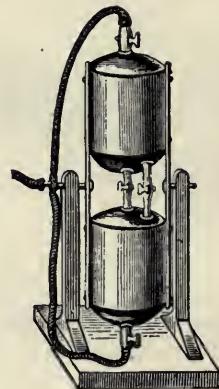
158



159



160



161

No.

158 **Asbestos Pads**, for protecting the table during blowpipe and other operations. They are made from Asbestos board about one-fourth of an inch thick, and edged with iron. They are incombustible, and excellent non-conductors of heat. The advantages to be derived by their use during blowpipe work are too obvious to need further explanation.

Prices:

Size, 4 in. x 4 in. x $\frac{1}{4}$ in.....	\$0.15
Size, 8 in. x 8 in. x $\frac{1}{4}$ in.....	.40
Size, 6 $\frac{1}{2}$ in. x 10 in. x $\frac{1}{4}$ in.....	.50
Size, 10 in. x 13 in. x $\frac{1}{4}$ in.....	.85
Size, 13 in. x 20 in. x $\frac{1}{4}$ in.....	1.50
159 Aspirators , of zinc, japanned, single reservoir, capacity 10 litres.....	\$ 6.00
Capacity 20 litres	9.00
160 Aspirators , of zinc, japanned, double reservoir to be reversed, for continuous suction. Capacity 10 litres	10.00
Capacity 20 litres	15.00
161 Aspirators , of zinc, japanned, revolving for continuous suction without change of connecting tube. Capacity 10 litres.....	25.00

Concerning the Selection of a Balance of Precision

The highest quality in a balance, and the most difficult one to obtain, is a beam with great stability of poise and extreme sensibility. These two conditions are in exact opposition to each other. A low center of gravity causes stability and gives to the beam or pointer a strong tendency toward the zero point. For example, take a beam with a very low center of gravity; it has a quick oscillation and is very stable. It will not be noticeably affected by outside influences such as electrical currents, vibrations, changes in temperature, etc. Such a balance will be very accurate within its sensibility, but by reason of its low center of gravity it will not be perceptibly affected by a very light weight. In other words, it will be rapid and stable, but not sensitive.

Take the opposite of this condition. For example, say a beam in which the point of suspension and the center of gravity exactly coincide. With such a beam there would be no zero point. Theoretically, such a beam would remain in any position in which it might be placed and even the most minute weight suspended from either end of the beam would depress that end to the extreme limit of travel, but in practice outside influences and atmospheric conditions would keep it in almost constant motion and their effect would be so great as to entirely dominate.

It follows that outside influences must be overcome. The only way this can be accomplished is to have the center of gravity sufficiently below the center knife edge to give the necessary stability of poise.

The weight of the beam also has an important bearing on the position of the center of gravity. The lighter the beam the lower may be the center of gravity for a given sensibility.

It is a simple matter to lower the center of gravity in a balance beam, but in order not to sacrifice the sensibility, friction must be reduced to the minimum, which means knife edges perfectly ground, polished and adjusted.

A beam with imperfect knife edges may be adjusted to a high sensibility by raising the center of gravity, but such a balance would be practically devoid of any stability; its oscillations would be very slow and the weighings made on it would vary more at different times than if the sensibility were less and the stability greater.

The center of gravity in any balance must be low enough to give stability regardless of the condition of the knife edges. This is imperative in order to get uniform results in the weighing.

The sensibility to which a balance may be safely adjusted, therefore, depends upon the degree of accuracy with which the knife edges have been ground, polished and adjusted.

The fault with many of the cheap balances on the market to-day is not that they lack sensibility, but that they lack stability of poise.

It is a very common error among assayers to neglect testing for stability when selecting a fine balance. They demand a high sensibility only, and the balance that shows the greatest deviation of the pointer for a given weight is selected regardless of whether or not it will remain in balance any length of time.

In the production of a balance with poorly ground knife edges and not adjusted properly no care or skill is required, as the center of gravity may be quickly raised to compensate for any friction caused by imperfection in the grinding or adjusting of the knife edges, and a test for sensibility only will give the erroneous impression that it is a very fine instrument.



195

NO. OB KELLER ASSAY BALANCE.

5-inch Beam.

Sensitive to 1-500 Mg.

No.

195 For scientific laboratories, control and umpire assays. Although great sensibility reduces the speed, this balance will handle a large volume of work rapidly and economically.

Construction.

This type of construction permits of a much smaller, neater and more compact and stronger case, decreasing the unnecessary air space which tends to produce air waves, thereby greatly affecting the accuracy of a balance. No unnecessary parts have been added for effect. All brass work is gold plated.

Pointer.

Is upright and deviates five divisions on 1-10 Mg. on scale divided into twenty equal parts to the inch. It takes seventeen seconds for a complete oscillation.

Beam.

The beam is of the truss type, which gives it great strength and rigidity, with extreme lightness. The edges of this beam are so accurately adjusted that the sensibility will not vary whether loaded with 1 Mg. or two grammes. The length of beam is five inches between the outside edges and carries two grammes in each pan. There are no graduations on this beam to warp or weaken it. The scale is on a snow white base inlaid with black lines. In front of same is a black pointer attached to the rider operating device. This pointer indicates the rider on the beam. The rider carrier has a fixed place for a rider to hang. With this carrier the rider is placed on the beam and released from the carrier without moving the pointer in front of the scale, by simply pressing the center button of the outside knob. The accuracy of this arrangement cannot be disputed if our method of poising the beam is followed.

Beam Support.

Fall-away type, making the release of beam smooth and gradual; no sudden jar or jerks. This support is operated by a lever. This lever is a new and important feature, and it gives the support a smoother action. Its bearing upon the eccentric is of hardened steel and everlasting. The support may be removed for cleaning and replaced without losing the adjustment.

Hangers and Pans.

Hangers and Pans are made of German Silver and are interchangeable.

Price	\$300.00 Net
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196

NO. 2B KELLER ASSAY BALANCE.**5-inch Beam.****Sensitive to 1-300 Mg.**

No.
196 A high-grade balance at a moderate price. Especially adapted for schools, colleges, scientific laboratories, assayers and all who want an accurate and absolutely reliable instrument at a moderate price.

Construction.

Non-column type; simple in construction; nothing to get out of order; all brass work gold plated.

Pointer.

Is upright and deviates three divisions on 1-10 Mg. on scale divided into twenty equal parts to the inch. It takes fourteen seconds for a complete oscillation.

Beam.

The peculiar construction of beam gives it great strength and rigidity. The edges and bearings are so accurately adjusted that the sensibility will not vary whether loaded with one Mg. or two grams. The length of beam is five inches between the outside edges and carries two grams in each pan.

Beam Support.

Fall away type, making the release of the beam smooth and gradual; no sudden jar or jerks. This support is operated by a lever. This lever is a new and important feature and it gives the support a smoother action. Its bearing upon the eccentric is of hardened steel and everlasting. The support may be removed for cleaning and replaced without losing the adjustment.

Hangers and Pans.

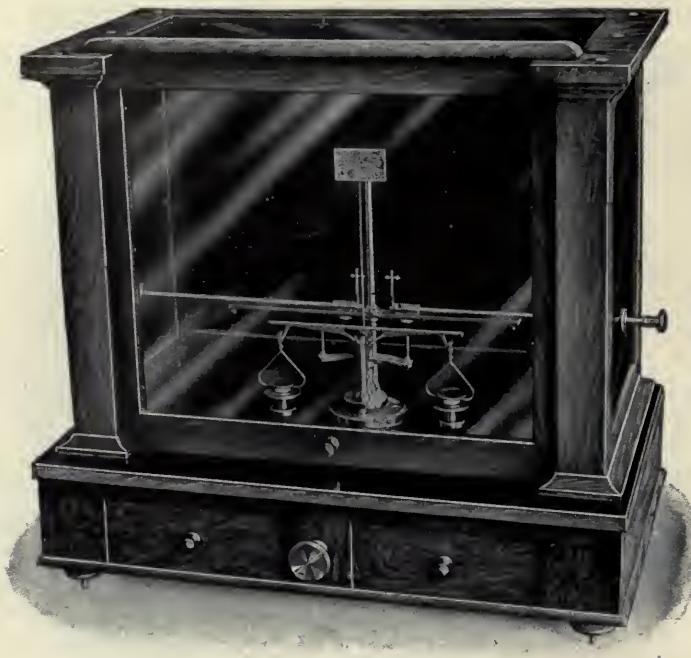
Hangers and Pans are made of German Silver and are interchangeable. The pans have a durable dead black lining. The most minute particle can easily be seen.

Stirrups of the Hangers.

The bearings are flat agate which hang free on a knife edge, doing away with all liability of friction. They are supported when not in use.

This balance as well as all other Keller balances will work satisfactorily on any temporary bench and is not affected by ordinary vibrations.

Price	\$200.00 Net
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197

NO. 3B KELLER ASSAY BALANCE.

5-inch Beam.**Sensitive to 1-200 Mg.****No.**

197 A high-grade balance at a moderate price. Especially adapted for schools, colleges, scientific laboratories, assayers and all who want an accurate and absolutely reliable instrument at a moderate price.

Construction.

Non-column type; simple in construction; nothing to get out of order; all brass work gold plated.

Pointer.

Is upright and deviates two divisions on 1-10 Mg. on scale divided into twenty equal parts to the inch. It takes eleven seconds for a complete oscillation.

Beam.

The peculiar construction of beam gives it great strength and rigidity. The edges and bearings are so accurately adjusted that the sensibility will not vary whether loaded with one Mg. or two grammes. The length of beam is five inches between the outside edges and carries two grammes in each pan.

Beam Support.

Fall away type, making the release of the beam smooth and gradual; no sudden jar or jerks. This support is operated by a lever. This lever is a new and important feature and it gives the support a smoother action. Its bearing upon the eccentric is of hardened steel and everlasting. The support may be removed for cleaning and replaced without losing the adjustment.

Hangers and Pans.

Hangers and Pans are made of German Silver and are interchangeable. The pans have a durable dead black lining. The most minute particle can easily be seen.

Stirrups of the Hangers.

The bearings are "V" grooved, which are carefully fitted to the knife edges.

This balance as well as all other Keller balances will work satisfactorily on any temporary bench and is not affected by ordinary vibrations.

Price \$150.00 Net



198

NO. 14 KELLER ASSAY BALANCE.

5-inch Beam.

Sensitive to 1-100 Mg.

No. 198.

Case.

Rectangular Polished Mahogany as nearly dust proof as can be made with counter-poised doors, black plate-glass sub-base covering entire top of base with two drawers underneath, as shown in cut, with adjusting screws and levels that will not get out of order.

Construction.

Non-column type. This type of construction permits of a much smaller and better case, decreasing the unnecessary air space which tends to produce air waves, thereby greatly affecting the accuracy of a balance.

Hangers.

Hangers and Pans are made of German Silver and are interchangeable. The pans have a durable dead black lining. The most minute particle is easily seen.

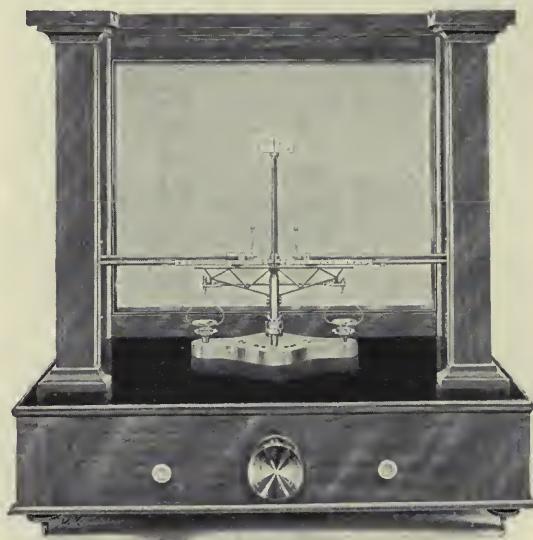
Beam.

Carries two grams in each pan, takes nine seconds for a complete oscillation and is non-magnetic. The pointer deviates one division, on 1-10 Mg., on the scale divided into twenty equal parts to the inch. One arm of the beam is divided into eleven tenths. The first tenth on the beam is undivided and is marked zero. The other tenths are divided into five equal parts each; in all the scale has fifty divisions on one arm. The divisions are very plain and can be easily read without the aid of a magnifying glass. Length of the beam is five inches between the outside edges. In poising the balance the rider should be placed at zero, then poised with one of the star wheels. Edges and bearings are agate accurately ground and adjusted with great skill and infinite patience. All brass work is gold plated. This balance as well as all other Keller balances will work satisfactorily on any temporary bench and is not affected by vibrations.

Pan Arrests.

Fall away type which will not get out of order.

Price	\$150.00 Net
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199

AINSWORTH'S INVERTED TYPE V BALANCE.

5-inch Beam.	Sensibility 1-200 to 1-500 Mg.*	Code Word, Apex.
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No.

199 The Rider Carrier is of improved design with no metal surfaces in sliding contact, and will operate smoothly and without lubrication under all conditions. The graduated scales, divided into hundredths,—each division representing 1-100 the weight of the rider used,—are attached to the carrier.

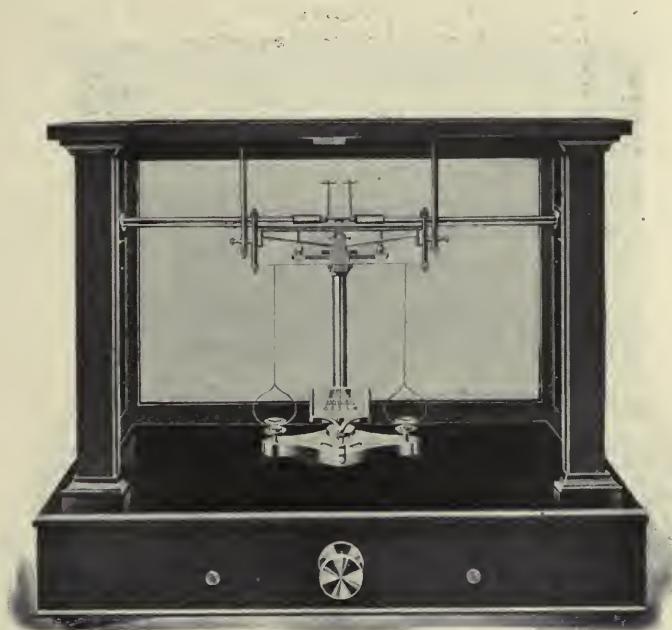
Simplicity. This balance has been designed with the fewest possible parts, thus limiting the liability to derangement, a feature that will be appreciated by assayers at a great distance from the factory.

Dimensions of case, 17 x 17 x 10 inches. Packed, 25 x 21 x 15 inches.

Weight, net 20 pounds, packed 50 pounds, packed in zinc lined case for export 60 pounds.

Price	\$300.00
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*At a rated sensibility of 1-200 milligramme the pointer or indicator of this balance deviates five divisions of one millimeter each on the scale or index for 1-10 milligramme. Greater sensibility is not recommended for commercial work.



200

DENVER FIRE CLAY COMPANY'S SPECIAL BUTTON BALANCE NO. 1.

5-inch—12.7 Cm. Beam. Sensibility 1-200 (.005) Mg. 1-13000 Gr.

Made specially for the Denver Fire Clay Company by Wm. Ainsworth & Sons.

No.

200 For particularly accurate weighings, such as control and umpire assays.

The beam is of brass, straight on top, and with 50 divisions each side of the center, reading to 1-50 milligramme with a 1 milligramme rider, or to 1-100 milligramme with a $\frac{1}{2}$ milligramme rider. Finer readings may be taken by sub-division with the eye, an especially ground reading lens being provided. The beam is unobstructed on top, and a rider may be placed anywhere from 0 at the center to the last division at either end, which is directly over the end edge and represents the full weight of the rider used.

The edges and bearings are of agate, has fall-away pan rests, improved base, plate-glass sub-base covering the entire base, and skeleton hangers. The rider apparatus is of improved design, and so constructed that there are no metal surfaces in contact with one another. It always works smoothly and it is never necessary to use a lubricant.

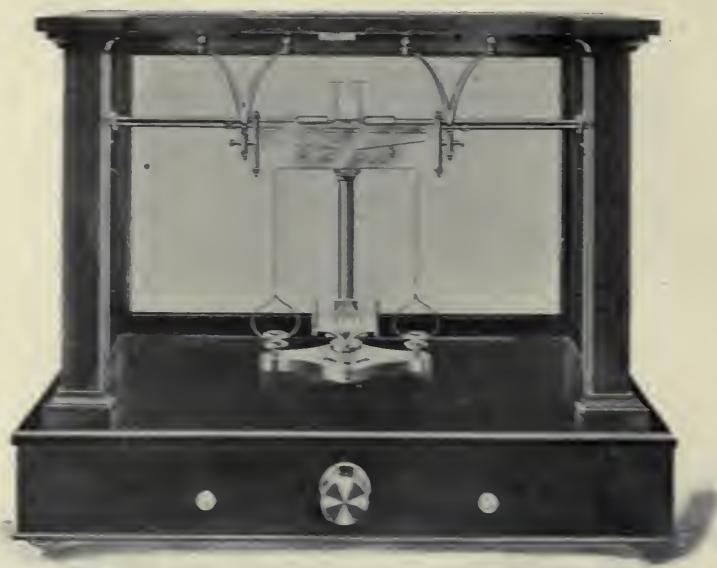
The case is of French polished mahogany with counterpoised sliding doors.

Dimensions, 20 x 17 x 10 inches.

In the cut the counterpoised door has been removed to better illustrate the balance.

Weight, net, 20 pounds. Packed, 50 pounds.

Price	\$275.00
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201

AINSWORTH'S TYPE C PRECISION BUTTON BALANCE.

5-inch—12.7 Cm. Beam. Sensibility 1-500 (.002) Mg. 1-32000 Gr.

No.
201

For particularly accurate weighings, such as control and umpire assays, and for scientific laboratories where the utmost accuracy is required.

We can also recommend this balance for the rapid handling of a large volume of particularly accurate work when adjusted to a sensibility of about 1-200 mg.—1-13000 grain.

The beam is of a special alloy, unobstructed on top, so that the rider may be placed at any point, and has 50 divisions each side of the center, each division representing 1-50 milligramme, with a 1 milligramme rider or 1-100 with a $\frac{1}{2}$ milligramme rider. Has improved star wheel adjustment, and cylindrically ground glass for reading divisions.

All edges and bearings are of specially selected agate accurately ground and polished by improved machinery.

Has fall-away pan-rests and skeleton hangers of hard drawn German Silver wire.

The rider apparatus is of improved design, and so constructed that there are no metal surfaces in contact with one another. It always works smoothly and it is never necessary to use a lubricant. The base is of improved design and contains center rod and pan rest bearings. This construction preserves the alignment of the working parts, regardless of any warping of the case, and the entire mechanism can be taken out for cleaning by removing three screws.

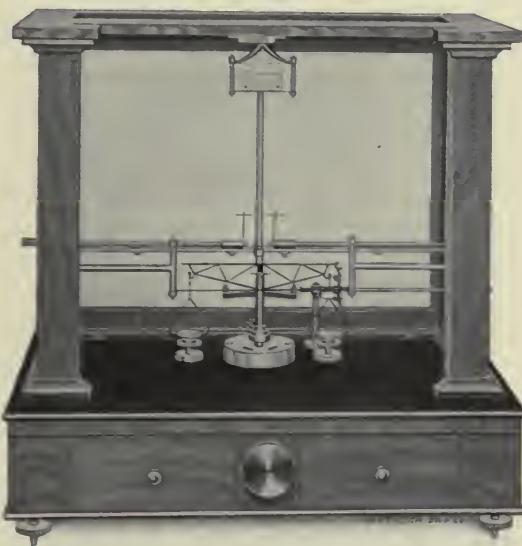
All metal work is gold plated. A plate-glass sub-base covers the entire top of base and the case is of thoroughly seasoned mahogany throughout and as nearly dust proof as it can be made.

In the engraving the counterpoised sliding door has been removed to better illustrate the balance.

Dimensions, 20 x 17 x 10 inches—50 x 43 x 25 centimeters.

Weight, net, 24 pounds—11 kilos. Packed, 50 pounds—22.5 kilos. Packed in zinc-lined case for export, 60 pounds—28 kilos. Dimensions, 27 x 21 x 15 inches—68 x 53 x 38 centimeters.

Price \$300.00



202

THOMPSON'S NO. 5 BUTTON BALANCE.

5-inch Beam.

Sensibility 1-500 Mg.

No.

202

We believe this balance to be superior to any of its type. It is designed and built for the most delicate assaying, and has advantages never before brought out in points of durability and extreme accuracy. It is of the non-column type, with upright pointer. This principle of construction gives plenty of room for a long pointer, plainly indicating the slightest movement of the beam and greatly reducing the length and weight of hangers, thereby tending to concentrate the movable mass near its central axis, and so creating the greatest possible stability of poise with the least possible resistance to the most minute load in the pan. The scientific construction of the beam will appeal to the engineer. It is of the truss type and is so constructed that all trusses are in tension, the lower chord alone being in compression.

Special attention is called to the fact that the graduations are on the beam. In this balance we use an etching process, which in no way affects the density of the metal, and the readings being taken direct from the position of the rider on the beam, there is no possibility of error through any difference between the relative position of the rider and the graduations.

The agate edges and bearings are of the finest quality and workmanship, and in this balance we spare no time or expense in bringing the various adjustments to the highest point of perfection.

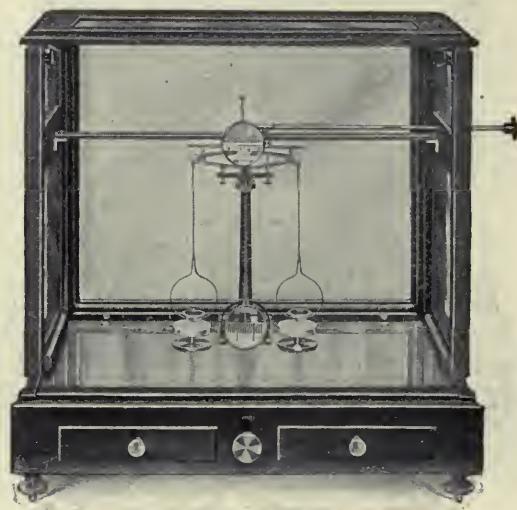
The rider apparatus, having fine felt bearings in contact with polished metal surfaces, gives a smooth and noiseless action, and is very sensitive to the touch.

The balance has a star wheel balancing device, skeleton hangers, fall-away pan rests, rider-rod locks, levels and leveling screws. The beam and index are provided with special ground cylindrical reading glasses, and all exposed metal parts are gold plated.

The case is of mahogany, thoroughly seasoned and finely polished, and has counter-poised door. A black glass-plate extends over the entire base.

Dimensions of case are 16½ x 17 x 10 inches.

Price, as illustrated and described.....	\$350.00
Price, without multiple rider attachment.....	325.00
Price, without reading glass for beam and without attachment.....	310.00



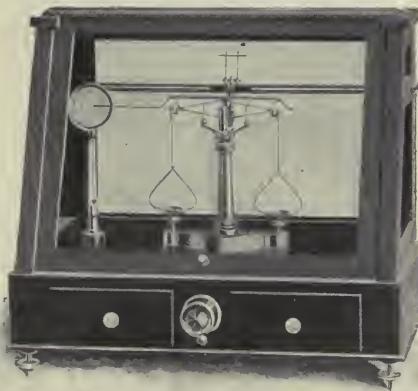
203

TROEMNER'S SPECIAL NO. 04 ASSAY BALANCE.

No.

203 Gold plated, 4-inch beam. Sensibility 1-500 milligramme. This balance is especially designed for control and umpire assay and for the rapid handling of all particularly accurate work, and for all scientific investigations where the highest attainable sensibility is required. The beam is 4 inches long, made of a special alloy, and oxidized black; the divisions are white, making it clear and easy to read. It has 100 full divisions each side of center knife and is provided with a specially ground reading glass. The rider carriage, which is operated from the right side, has full clear sweep. Has fall-away beam and pan rests, releasing the beam and pans without any jerk or kick. All bearings and edges are of agate. New improved arrangement for balancing beam rapidly and of extreme sensitiveness. A reading glass is provided for the ivory index and beam, adjustable at any angle, or can be dropped entirely out of the way. All the metal parts of the balance are gold plated. The case is of the finest old mahogany, finely finished, with glass sides, top and back, the glass sub-base is of black plate-glass, and entirely covers the top of case base. The case is as nearly dust proof as it is possible to make it, and is of the following dimensions: 17 inches high, 16½ inches wide, 9½ inches deep.

Price	\$250.00
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204

DENVER BALANCE COMPANY'S BUTTON BALANCE STYLE H.

4-inch Beam.

Sensitive 1-200—1-400 Mg.

No.

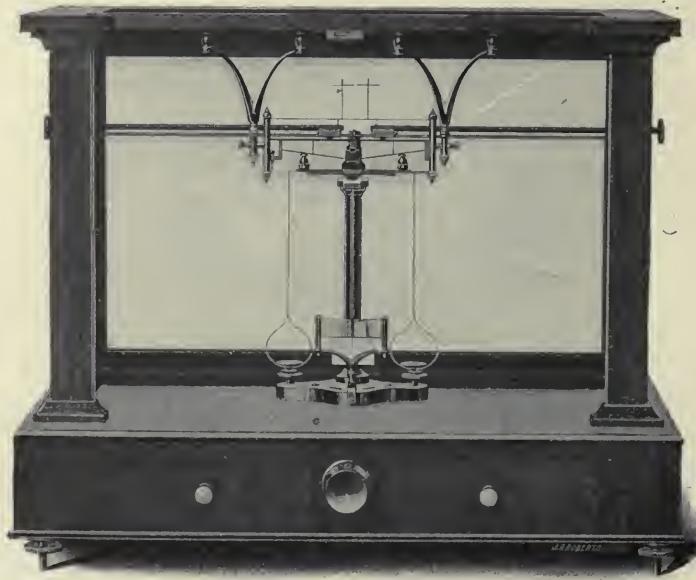
204 The beam is similarly constructed on either side of line of edges and pointer, insuring strength and perfect alignment of the edges during variations of temperature. The graduations are on a separate strip of Meteorite, and adjusted to the edges. The star-wheel adjustment is placed on either side of center edge. The beam-locking device, easily operated from the outside of case and found so very convenient in our portable styles, is applied to this balance also.

The advantages of it are—convenience in transportation, unnecessary handling of beam, greater safety in placing hangers and operating the star-wheel adjustment.

The rider attachment of improved design will always work smooth and easy under all conditions, and securely locks the carriers in place when not in use. A reliable thermometer set in the column supporting the index will be found a convenient adjunct to the balance. The working parts of the balance, mounted on a heavy plate-glass base, will always keep in perfect alignment.

The balance, although not classed as a portable, when provided with a leather-covered carrying case, can be used for such purpose.

Price, if sensitive to 1-200 mg.	\$200.00
Price, if sensitive to 1-400 mg.	225.00
Carrying case, net	6.50



205

AINSWORTH'S TYPE D PRECISION BUTTON BALANCE.

4-inch—10 Cm. Beam.

Sensibility 1-400 (.0025) Mg.—1-26000 Gr.

No.

205 This balance is similar to Type C, excepting the beam, which is 4 inches long. While not quite as sensitive as Type C, it is more rapid, and when adjusted to a sensibility of 1-200 milligramme is unequalled for rapidity.

It has improved rider apparatus, star-wheel adjustment, cylindrically ground reading glasses for beam and index, skeleton hangers, improved base, agate edges and bearings, fall-away pan rests, etc.

Case of French polished mahogany with extension plate-glass sub-base covering entire top of base.

In the engraving the counterpoised door has been removed to better illustrate the balance.

Dimensions, 20 x 17 x 10 inches—50 x 43 x 25 centimeters.

Weight, net, 24 pounds—11 kilos. Packed, 50 pounds—22.5 kilos. Packed in zinc-lined case for export, 60 pounds—28 kilos. Dimensions, 27 x 21 x 15 inches—68 x 53 x 38 centimeters.

Price	\$300.00
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206

THOMPSON'S BUTTON BALANCE, STYLE NO. 6.

4-inch Beam.

Sensibility 1-400 Mg.

No.

206 We recommend this balance for work requiring extreme accuracy, such as control and umpire assays.
It is quick and positive in action, and has a stability of poise that will insure uniform and reliable results.
Edges and bearings are of selected agate, and are ground and polished with the greatest possible care.
The balance has improved rider apparatus, star-wheel balancing device, specially ground reading glasses for beam and index, skeleton hangers, fall-away pan rests, rider-rod lock, levels and leveling screws.
Case is of thoroughly seasoned mahogany with counterpoise door. It is finely polished and has a black glass plate, which extends over the entire base.

Dimensions, 16½ x 17 x 10 inches.

Price, as illustrated and described..... \$325.00

Price, without Multiple Rider attachment..... 300.00

THOMPSON'S BUTTON BALANCE, STYLE NO. 8.

5-inch Beam.

Sensibility 1-400 Mg.

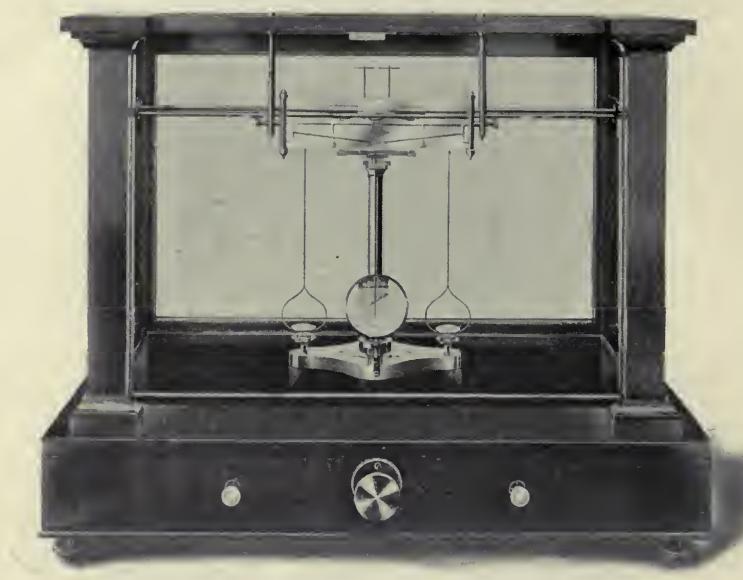
No.

206a Similar to Style No. 6, excepting the beam, which is one inch longer, and of the plain construction without braces or pin graduations.

Dimensions, 20 x 17 x 10 inches.

Price, as described \$290.00

Price, without Multiple Rider attachment 265.00



207

AINSWORTH'S TYPE A BUTTON BALANCE.

5-inch—12.7 Cm. Beam.

Sensibility 1-200 (.005) Mg.—1-13000 Gr.

No.

207 For accurate and rapid weighings, and used by many assayers having a large volume of work.

The beam is of brass, straight on top and with 50 divisions each side of the center reading to 1-50 milligramme with a 1 milligramme rider, or to 1-100 milligramme with a $\frac{1}{2}$ milligramme rider, finer readings being taken by subdividing the divisions with the eye, a specially ground reading glass being provided. The beam is unobstructed on top, and a rider may be placed anywhere from 0 at the center to the last division at either end, which is directly over the end edge and represents the full weight of the rider used.

All edges and bearings are of agate. Has fall-away pan rests, improved base, rider apparatus and releasing mechanism, plate-glass sub-base, and skeleton hangers. In French polished mahogany case with counterpoised sliding door.

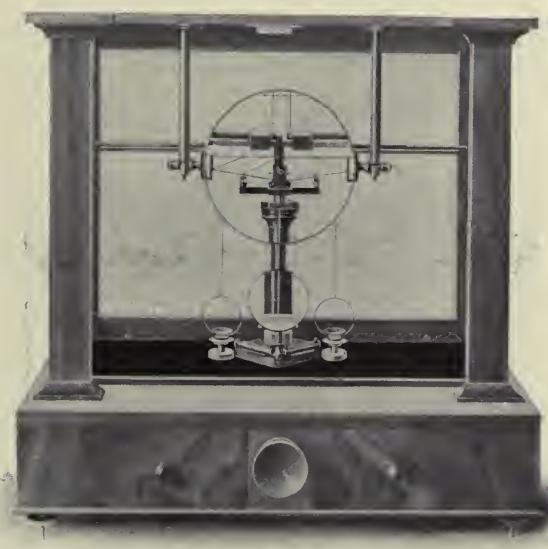
Dimensions, 20 x 17 x 10 inches—50 x 43 x 25 centimeters.

In the cut the counterpoised door has been removed to better illustrate the balance.

Weight, net, 20 pounds — 9.1 kilos. Packed, 50 pounds — 22.5 kilos. Packed for export in zinc-lined case, 60 pounds—28 kilos.

Dimensions, 27 x 21 x 15 inches—68 x 53 x 38 centimeters.

Price	\$250.00
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208

THOMPSON'S BUTTON BALANCE, STYLE NO. 7.

4-inch Beam.

Sensibility 1-200 Mg.

No. 208 Has agate edges and bearings, truss beam with pin graduations, double rider attachment, fall-away pan rests, star wheel balancing device, skeleton hangers, rider rod locks, reading glasses for beam and index. Mahogany case with plate-glass base, levels and leveling screws.
Dimensions, 16½ x 17 x 10 inches.
If preferred we will furnish at same price a rectangular reading glass for beam instead of the round glass shown in illustration.

Price, as illustrated and described	\$250.00
Price, with Multiple Rider attachment	275.00

THOMPSON'S BUTTON BALANCE, STYLE NO. 9.

4-inch Beam.

Sensibility 1-200 Mg.

No. 208a Same in all respects as Style No. 7, except that this style has no magnifying glass for beam.

Price, as illustrated and described	\$235.00
Price, with Multiple Rider attachment	260.00

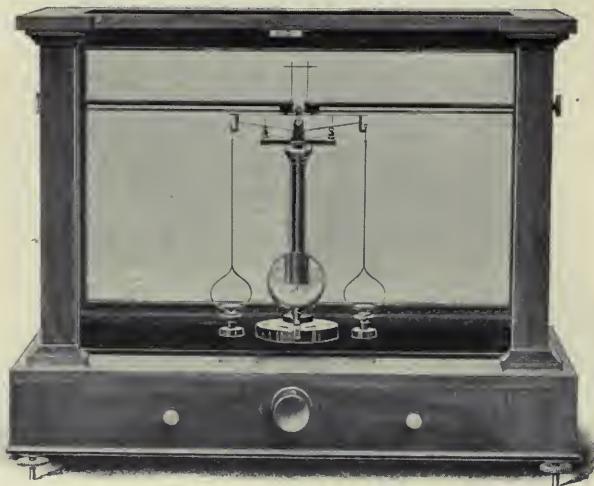
THOMPSON'S BUTTON BALANCE, STYLE NO. 10.

4-inch Beam.

Sensibility 1-200 Mg.

No. 208b Same in all respects as Style No. 9, excepting the beam, which is of plain type, without braces or pin graduations.

Price, as described	\$200.00
Price, with Multiple Rider attachment	225.00



209

AINSWORTH'S TYPE E BUTTON BALANCE.

5-inch—12.7 Cm. Beam.

Sensibility 1-200 Mg.—1-13000 Gr.

No.

209 This balance is similar in all respects to Type A, but is not provided with reading glass for beam, nor improved base.

Has all latest improvements, including improved rider apparatus, star-wheel adjustment, skeleton hangers, plate-glass sub-base, agate edges and bearings, etc.

Case is of thoroughly seasoned mahogany, with counterpoised sliding door.

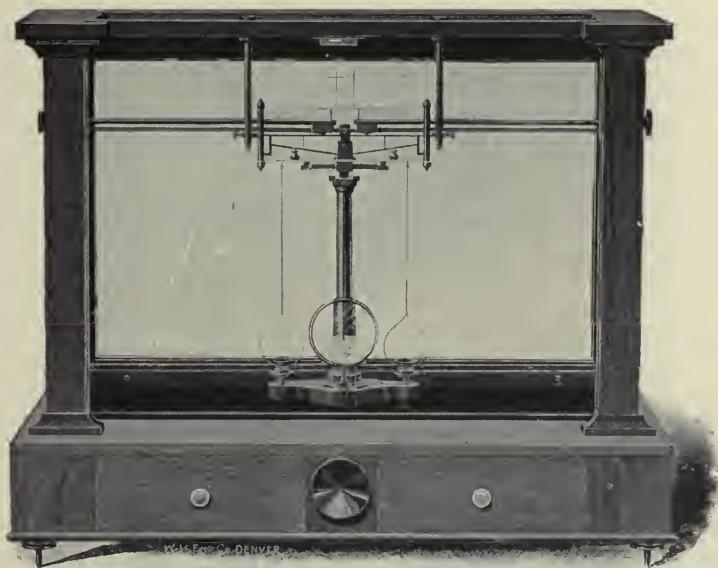
Dimensions, 20 x 17 x 10 inches—50 x 43 x 25 centimeters.

In the engraving the counterpoised sliding door has been removed to better illustrate the balance.

Weight, net, 20 pounds — 9.1 kilos. Packed, 50 pounds — 22.5 kilos. Packed for export in zinc-lined case, 60 pounds—28 kilos.

Dimensions, 27 x 21 x 15 inches—68 x 53 x 38 centimeters.

Price	\$225.00
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210

AINSWORTH'S TYPE F BUTTON BALANCE.

4-inch—10 Cm. Beam.

Sensibility 1-200 (.005) Mg.—1-13000 Gr.

No.

210 This balance, having a beam but four inches long, is very rapid and has all the latest improvements, including reading glass for beam, improved rider apparatus and base, fall-away pan rests, plate-glass sub-base, skeleton hangers.

The beam has 50 divisions each side of the center reading to 1-50 milligramme with a 1 milligramme rider or to 1-100 milligramme with a $\frac{1}{2}$ milligramme rider, finer readings being taken by subdividing the divisions with the eye. It is unobstructed on the top, and the rider can be placed at any point from the 0 at the center to the last division at either end, which is directly over the end edge and represents the full weight of the rider used. All edges and bearings are of agate.

Has French polished mahogany case with counterpoised sliding door, all of thoroughly seasoned lumber.

Dimensions, 20 x 17 x 10 inches—50 x 43 x 25 centimeters.

In the engraving the counterpoised sliding door has been removed to better illustrate the balance.

Weight, net, 20 pounds—9.1 kilos. Packed, 50 pounds—22.5 kilos. Packed for export in zinc-lined case, 60 pounds—28 kilos.

Dimensions, 27 x 21 x 15 inches—68 x 53 x 38 centimeters.

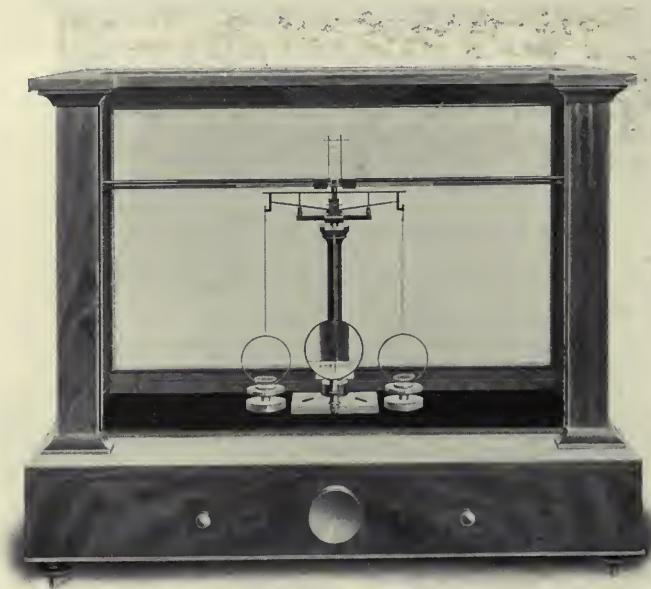
Price	\$225.00
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AINSWORTH'S TYPE FA BUTTON BALANCE.

No.

210a Similar in all respects to Type F, except that it has no reading glass for beam.

Price	\$200.00
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211

THOMPSON'S BUTTON BALANCE, STYLE NO. 19.

5-inch Beam.

Sensibility 1-100 Mg.

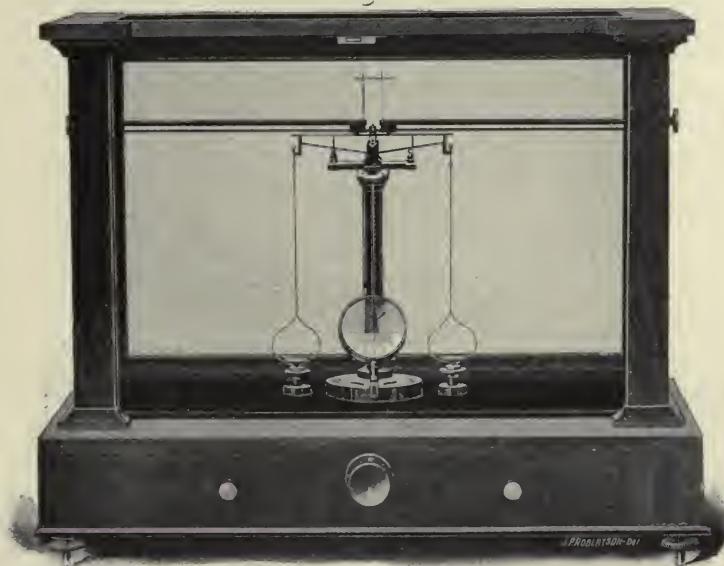
No.

211 Has agate edges and bearings, double-rider attachment, fall-away pan rests, star adjustment, skeleton hangers, levels and leveling screws, reading glass for ivory index, polished mahogany case with plate-glass base.

Dimensions, 20 x 17 x 10 inches.

Price, as illustrated and described..... \$165.00

Price with Multiple Rider attachment..... 190.00



212

AINSWORTH'S TYPE EA BUTTON BALANCE.

5-inch—12.7 Cm. Beam.

Sensibility 1-100 Mg.—1-6500 Gr.

No.

212 Has heavy 5-inch beam and is suitable for accurate and rapid gold and silver button weighing.
Has all latest improvements, including fall-away pan rests, agate edges and bearings, skeleton hangers, double rider apparatus, plate-glass sub-base, reading glass for index, etc.
Dimensions, 20 x 17 x 10 inches—50 x 43 x 25 centimeters.
In the engraving the sliding door has been removed to better illustrate the balance.
Weight, net, 20 pounds—9.1 kilos. Packed, 50 pounds—22.5 kilos. Packed for export in zinc-lined case, 60 pounds—28 kilos.
Dimensions, 27 x 21 x 15 inches—68 x 53 x 38 centimeters.

Price	\$160.00
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AINSWORTH'S TYPE FB BUTTON BALANCE.

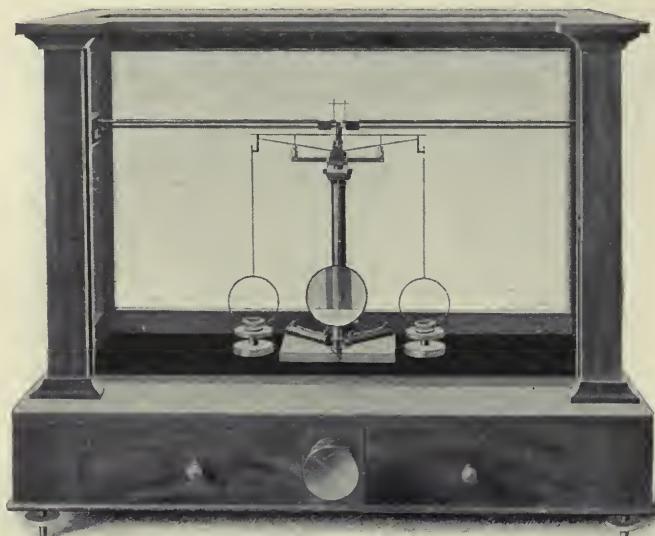
4-inch—10 Cm. Beam.

Sensibility 1-100 Mg.—1-6500 Gr.

No.

212a Similar to Type EA, except in length of beam.

Price	\$160.00
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213

THOMPSON'S BUTTON BALANCE, STYLE NO. 20.

6-inch Beam.

Sensibility 1-100 Mg.

No.

213 Has agate edges and bearings, double rider attachment, plate-glass base, reading glass, fall-away pan rests, star adjustment, skeleton hangers, levels and leveling screws, polished mahogany case with counterpoised door.
Dimensions, 20 x 17 x 10 inches.

Price, as illustrated and described \$135.00

Price, with Multiple Rider attachment 160.00

THOMPSON'S BUTTON BALANCE, STYLE NO. 21.

6-inch Beam.

Sensibility 1-100 Mg.

No.

213a Same in all respects as style No. 20, except that it has no plate-glass base.

Price, as described \$125.00

Price, with Multiple Rider attachment 150.00

THOMPSON'S BUTTON BALANCE, STYLE NO. 22.

6-inch Beam.

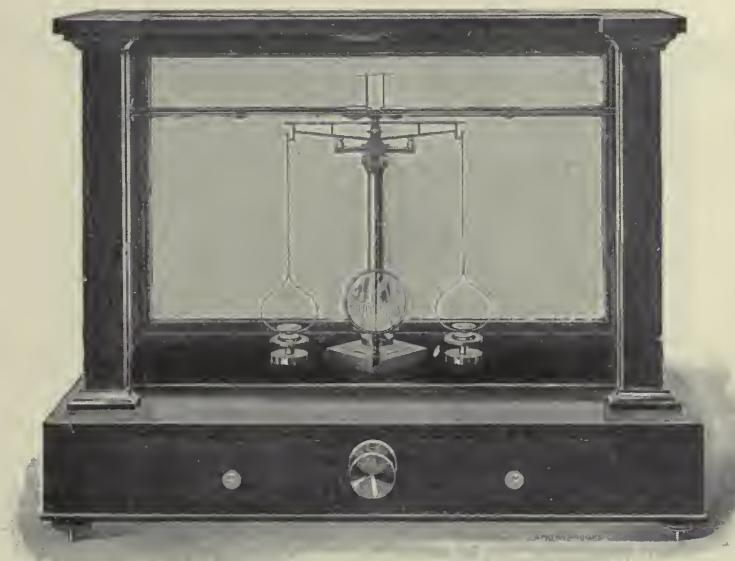
Sensibility 1-50 Mg.

No.

213b Same as style No. 21, except that it has single rider attachment and not as sensitive.

Price, as described \$100.00

Price, with Multiple Rider attachment 125.00



214

AINSWORTH'S TYPE H BUTTON BALANCE.

6-inch—15.2 Cm. Beam.

Sensibility 1-100 (.01) Mg.—1-6500 Gr.

No.

214 An excellent button balance for ordinary button weighings with all the latest improvements, including improved rider apparatus and fall-away pan rests. Has agate edges and bearings and star-wheel adjustment.

The beam has 50 divisions each side of the center reading to 1-50 milligramme with a 1 milligramme rider, or to 1-100 milligramme with a $\frac{1}{2}$ milligramme rider, and being unobstructed on the top the rider may be placed at any point from 0 at the center to the last division, which is directly over the end edge and represents the full weight of the rider used.

Has French polished mahogany case of thoroughly seasoned mahogany, with counterpoised sliding door and plate-glass sub-base.

Dimensions, 20 x 17 x 10 inches—50 x 43 x 25 centimeters.

In the engraving the counterpoised sliding door has been removed to better illustrate the balance.

Weight, net, 20 pounds—9.1 kilos. Packed, 50 pounds—22.5 kilos. Packed for export in zinc-lined case, 60 pounds—28 kilos.

Dimensions, 27 x 21 x 15 inches—68 x 53 x 38 centimeters.

Price	\$135.00
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AINSWORTH'S TYPE I BUTTON BALANCE.

8-inch Beam.

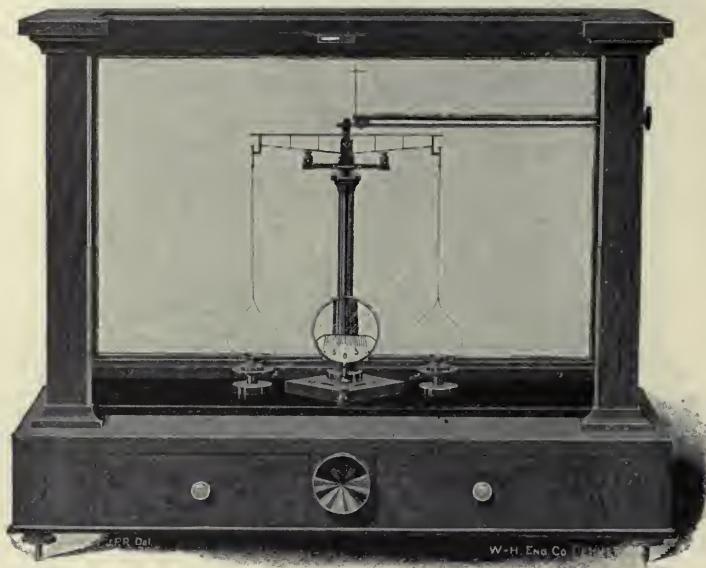
Sensibility 1-100 Mg.

No.

214a Similar in all respects to Type H, only a little slower in action, owing to the difference in length of the beam (2 inches).

Dimensions of case, 20 x 17 x 10 inches—50 x 43 x 25 centimeters.

Price	\$125.00
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215

AINSWORTH'S TYPE J BUTTON BALANCE.

6-inch—15.2 Cm. Beam. Sensibility 1-50 (.02) Mg.—1-3200 Gr.

No.

215 This balance is similar to Type H, excepting the beam, which is graduated and provided with rider apparatus on right hand side only and adjusted to a sensibility of 1-50 milligramme. Has latest improved rider apparatus, agate bearings and edges, plate-glass sub-base, fall-away pan rests, etc. In French polished mahogany case, with counterpoised sliding door.

Dimensions, 20 x 17 x 10 inches—50 x 43 x 25 centimeters.

In the engraving the counterpoised sliding door has been removed to better illustrate the balance.

Weight, net, 20 pounds—9.1 kilos. Packed, 50 pounds—22.5 kilos. Packed for export in zinc-lined case, 60 pounds—28 kilos.

Dimensions, 27 x 21 x 15 inches—68 x 53 x 38 centimeters.

Price \$110.00

AINSWORTH'S TYPE K BUTTON BALANCE.

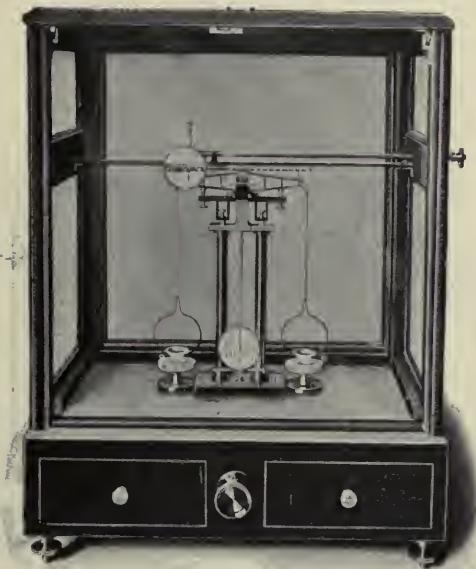
8-inch—20 Cm. Beam. Sensibility 1-50 (.02) Mg.—1-3200 Gr.

No.

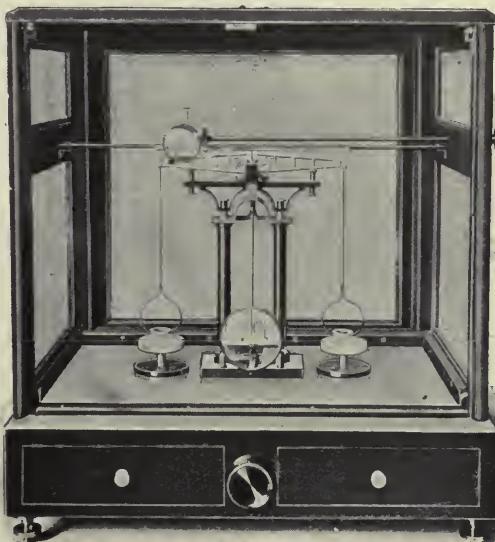
215a Similar to Type J, only slower, owing to the difference in length of beam (2 inches).

Dimensions, 27 x 21 x 15 inches—68 x 53 x 38 centimeters.

Price \$100.00



216



217

TROEMNER'S NO. 08 (NEW) SHORT ARM ASSAY BALANCE.

5-inch Beam.

Sensibility 1-200 Mg.

No.

216 This balance is of the same type and finish as No. 5, except that it is smaller and has 5-inch beam of special aluminum alloy, oxidized black with white divisions, and is divided into 100 parts each side of the center knife edge. The rider carriage has full clear sweep and is provided with adjustable reading glass for the beam. Has fall-away beam and pan-rests. All the bearings and edges are of agate. There is a reading glass for ivory index. The case is of old mahogany, finely finished, with glass sides, back and top; the sub-base is of black plate-glass, and the whole is as nearly dust proof as it is possible to make it.

Price \$165.00

TROEMNER'S NO. 5 ASSAY BALANCE.

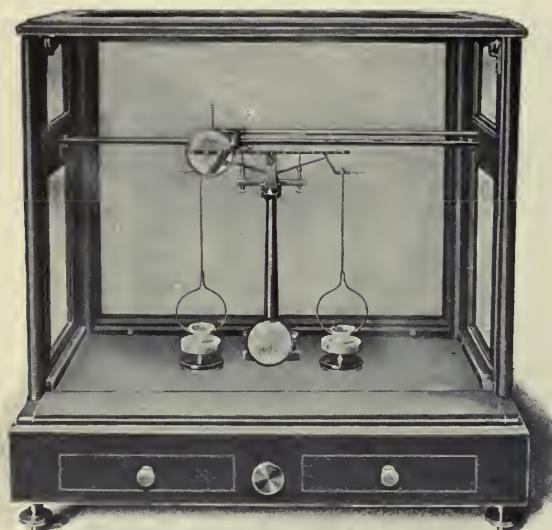
8-inch Beam.

Sensibility 1-400 Mg.

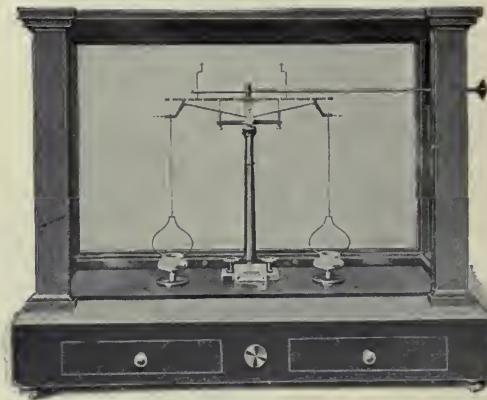
No.

217 This balance is of the very highest type, and has special alloy aluminum beam 8 inches long, and graduated both sides of the center knife edge into 100 divisions, and oxidized black with white divisions, making it clear and easy to read. The rider carriage has full clear sweep, and is provided with a specially ground reading glass, which is adjustable. Has fall-away beam and pan-rests, which releases the beam first and then the pans, and is free from jerks and kicks. All bearings and edges are of agate. An adjustable reading glass is provided for the ivory index. The case is of the finest old mahogany, finely finished with glass sides, back and top, the sub-base is of black plate-glass, the whole being as nearly dust proof as it is possible to make it.

Price \$175.00



218



219

TROEMNER'S NEW NO. 7 ASSAY BALANCE.

5-inch Beam.

Sensibility 1-200 Mg.

No.

218 Single column. The beam is of special aluminum alloy, oxidized black with white divisions; it is divided into 100 divisions each side of the center knife edge. The rider carriage has full clear sweep, and is provided with a specially ground reading glass for the beam. Has fall-away beam and pan-rests. All the bearings and edges are of agate. There is an adjustable reading glass for ivory index. The case is of the finest old mahogany, finely finished, with glass sides, top and back, the sub-base is of black plate-glass, and is as nearly dust proof as it is possible to make it.

Price	\$175.00
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TROEMNER'S NO. 3 ASSAY BALANCE.

7½-inch Beam.

Sensibility 1-100 Mg.

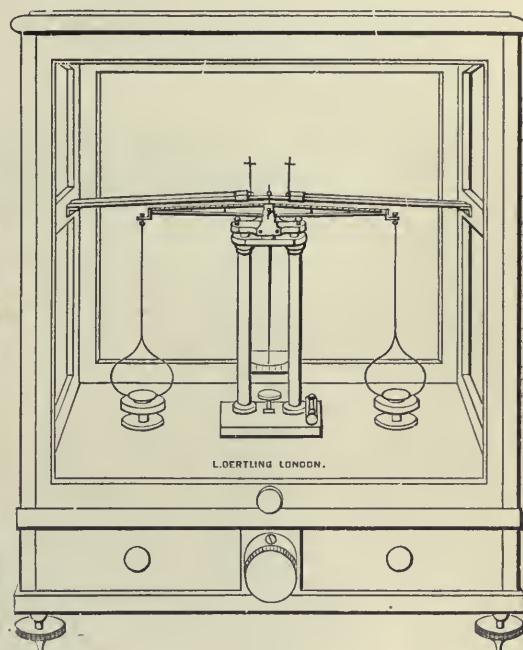
No.

219 It is intended for use, and will do all the practical work the assayer has to do, and do quickly, at the smelter. The beam is of special alloy, oxidized black with white divisions, and is divided into 50 divisions each side of the center knife edge. The rider carriage has full clear sweep. Has fall-away beams and pan rests. All the bearings and edges are of agate. The case is of old mahogany, finely finished, with glass top, sides and back, the sub-base is of black plate-glass, and is as nearly dust proof as it is possible to make it.

Price	\$95.00
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220



221

TROEMNER'S NO. 2 ASSAY BALANCE.

7½-inch Beam.

Sensibility 1-50 Mg.

No.

220 The beam is of aluminum alloy, and is divided on the right side only of the center knife edge into 50 divisions. The rider carriage has full clear sweep. Has fall beam and pan-rests. All the bearings and edges are of agate. The case is of the finest old mahogany, finely finished, with glass front, back and sides, and is as nearly dust proof as it is possible to make it.

Price	\$80.00
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OERTLING'S ASSAY BALANCE NO. 12.

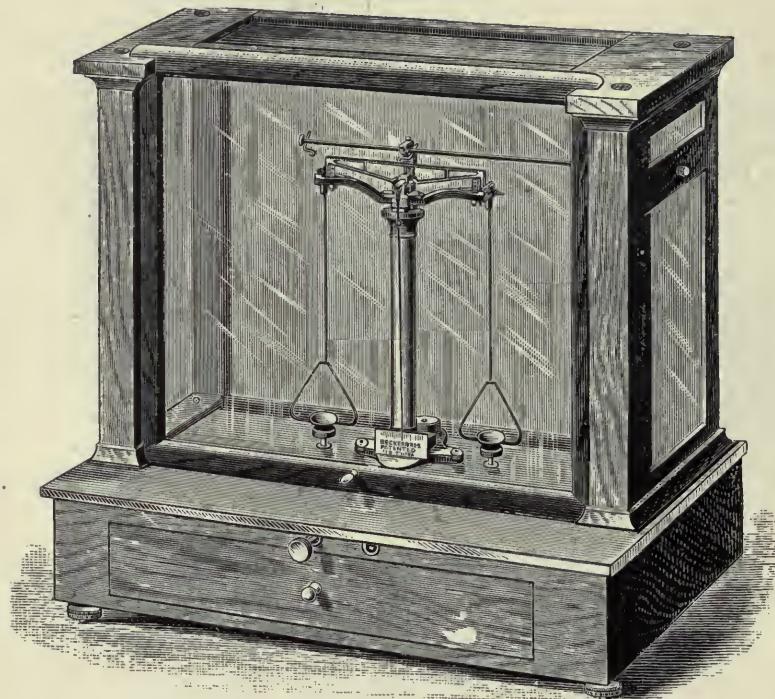
10-inch Beam.

Sensibility 1-100 Mg.

No.

221 In polished mahogany case with counterpoised door, plate-glass bottom, two levels and leveling screws, double column; the beam is divided on each side of the center into fiftieths of a milligramme, bearings agate. One milligramme rider furnished with each balance.

Price	\$175.00
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222

BECKER'S ASSAY BALANCE NO. 4, SHORT BEAM.

No.

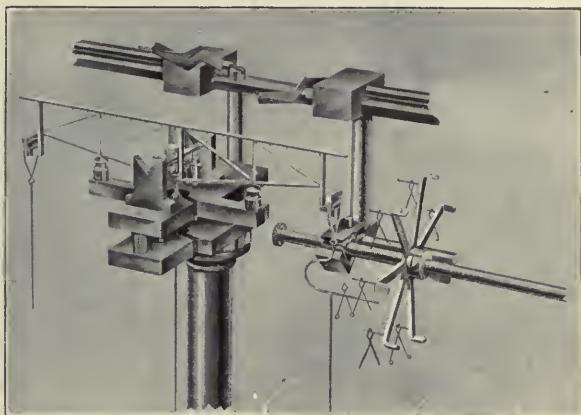
222 In French polished mahogany, glass case, front sliding frame counterpoised, with glass top to admit more light on the rider. All parts of the balance are mounted and fastened on plate-glass 5-16 in. thick, so that nothing can get out of order through warping of the wood. Agate bearings and agate knife edges; beam graduated into 1-50 milligramme and the rider can be placed on the center of the beam and used from the 0 point to either end of it. Needle deviates 50 divisions on the scale for 1 milligramme. A 1 and 2-10 milligramme rider included.

Price	\$135.00
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222a Same as No. 222, with aluminum beam, bows, pans, etc.	145.00
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This attachment and the riders used in connection with it take the place of all flat weights on Button Balances for weighing up to 72 milligrammes, and on Analytical Balances up to 720 milligrammes. The attachment is very simple, being operated from the outside of the balance case. It consists of a movable wheel or carrier with seven arms, each arm carrying a rider of different weight.

On Button Balances the riders used are 1, 2, 3, 5, 10, 20 and 30 milligrammes; and on Analytical Balances 10, 20, 30, 50, 100, 200 and 300 milligrammes. The end of each rider is formed to indicate its weight.

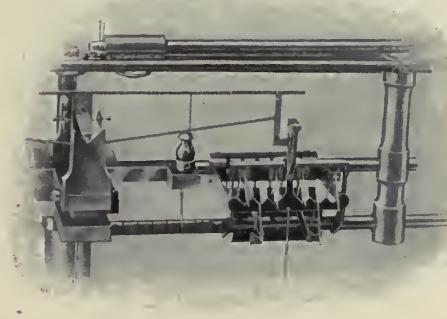


THOMPSON'S MULTIPLE RIDER ATTACHMENT.

Patented August 30, 1904.

When a balance is equipped with this attachment, the operator, instead of having to use tweezers to place small flat weights in the pan, places these wire weights or riders on the support provided for this purpose, which is equivalent to placing flat weights of the same value in the pan.

To obtain fractions of a milligramme, a 1 milligramme rider is used on the beam.



AINSWORTH'S MULTIPLE RIDER ATTACHMENT.

The above illustration shows Ainsworth's Improved Multiple Rider Carrier, as adapted to button balances, for weighing without the use of the ordinary weights as used in the pan.

The riders maintain their original accuracy even after months of constant use, and not being subjected to the continual handling with tweezers, do not become bent or broken.

Each rider is carried on a separate arm a short distance above the bar on the stirrup, and it is only necessary to move the number on the lower rod until it stands opposite the index pointer, and then revolve the rod slightly, which transfers the rider from the arm to the stirrup.

Each rider has its individual arm for manipulating and cannot become misplaced, thereby causing an error in the following weighing.

Buttons weighing up to 42 milligrammes can be weighed with the regular carrier and for larger capacities additional arms may be added.

When weighing a button at or near the capacity of the carrier, all of the riders may be shifted to the stirrup simultaneously, and those not needed transferred back to their respective arms. The figures on the front of arms down indicating the combined weight of the riders on the stirrups.

Price, attached to new balance when ordered.....	\$35 00
Price, attached to old balance.....	40.00



223

AINSWORTH'S TYPE RA PORTABLE BUTTON BALANCE.

5-inch—12.7 Cm. Beam.

Sensibility 1-100 (.01) Mg.—1-6500 Gr.

and

TYPE N PORTABLE PULP BALANCE.

8-inch—20 Cm. Beam.

Sensibility 1 Mg.—1-65 Gr.

Capacity, 200 grammes—8 ounces.

No.

223 The above illustration shows our Types RA and N Portable Button and Pulp Balances, packed in a single mahogany carrying case. This is a very compact and convenient prospecting outfit. All parts of the Pulp Balance pack in the drawer, and Button Balance has special device for locking beam in position. Dimensions of carrying case, 7 x 14 x 11 inches—17 x 35 x 28 centimeters. Weight, net, 9½ pounds—4½ kilos. Packed, 20 pounds—9 kilos. Packed for export in zinc-lined case, 24 pounds—11 kilos. Dimensions, 11 x 19 x 16 inches—28 x 48 x 40 centimeters.

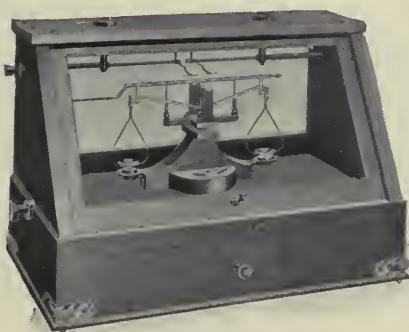
Price	\$95.00
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TYPES R AND N.

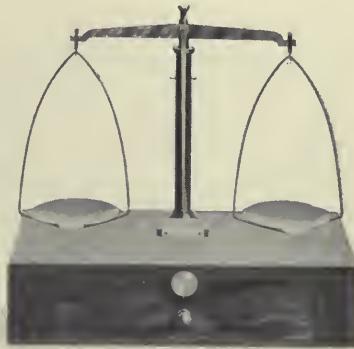
No.

223a In single carrying case same as Types RA and N, but with single rider apparatus on Button Balance.

Price	\$90.00
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224a



224b



224

THOMPSON'S COMPLETE PORTABLE BALANCE OUTFIT, STYLE NO. 27.

No.		
224	This outfit consists of Button Balance, Style No. 24, and Pulp Balance, Style No. 37, together in one carrying case. Dimensions of carrying case, 12 x 13 x 7½ inches.	
Price		\$100.00

THOMPSON'S BUTTON BALANCE, STYLE NO. 24.

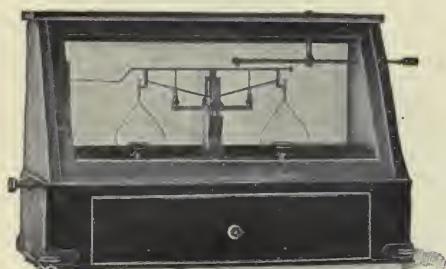
5-inch Beam. Sensibility 1-100 Mg.

No.		
224a	Has double rider attachment, agate edges and bearings, fall-away pan-rests, levels and leveling screws. Polished mahogany case with sliding door, which can be fastened at any point by turning the knob. By simply pressing a button the beam is locked in place for transport.	
Price		\$85.00

THOMPSON'S PULP BALANCE, STYLE NO. 37.

7-inch Beam. Sensibility 1 Mg.

No.		
224b	On mahogany base with drawer in which the column, beam, hangers and pans can be packed for convenience in shipping. Pans 3 inches in diameter. Dimensions, 6 x 11 x 2½ inches.	
Price		\$13.00



225 Style S.



225 Style O.



225P

DENVER BALANCE CO.'S PORTABLE BUTTON BALANCE S.**5-inch Beam.****Sensibility 1-50 to 1-100 Mg.**

No.

225 Has agate edges and bearings, fall-away pan-rests, level and leveling screws. The beam is unobstructed on top and is provided with a locking device securely holding it in place while in transport. The case is of walnut, French polished, and of the beveled front pattern; has sliding door, which can be held at any point. These are good, substantial balances, capable of withstanding a reasonable amount of hard usage, and of a much better grade than other makes of same price and capacity. All material is of the best. Dimensions of carrying case, 13 x 12 x 7½ inches. Weight, outfit complete, 14 lbs. Price, Style S, sensitive to 1-50 mg., single rider attachment..... \$ 85.00 Price, Style S, sensitive to 1-50 mg., double rider attachment..... 90.00 Price, Style S, sensitive to 1-100 mg., double rider attachment..... 112.00 In combination with Style O, Portable Pulp Balance, extra..... 15.00

STYLE O, PORTABLE PULP BALANCE.**6-inch Beam.****Sensitive to 1 Mg.**

Fitted with level and leveling screws, 2½-inch pans, mounted on a French polished mahogany base, into the drawer of which the beam, column, hangers and pans pack for carrying.

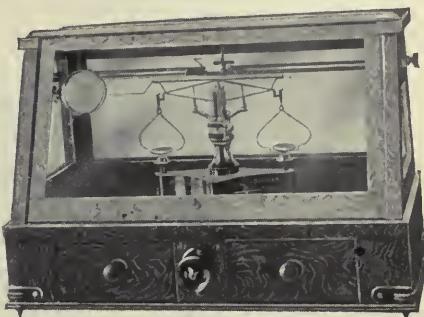
Price \$ 15.00

POCKET ASSAY BALANCE NO. 5A.

No.

225P For Traveling, when closed, measures 6 inches long, 2¾ inches wide, and 1¼ inches high. Is raised and lowered by means of drop lever. Including weights, 10 grammes, down to 1 mg., neatly fitted in box as shown in cut. Shows 4 divisions for 1 mg.

Price \$ 18.00



225a

DENVER BALANCE CO.'S PORTABLE BUTTON BALANCE R.

4-inch Beam.

Sensitive 1-100 to 1-200 Mg.

No.

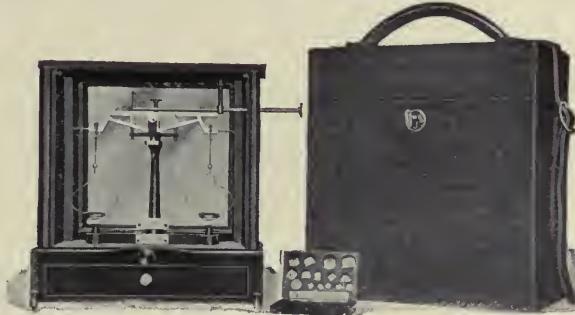
225a This balance has been designed and constructed with the view of furnishing assayers and mine experts in need of a more accurate and up-to-date portable balance than has heretofore been obtainable.

The beam, similar to Style H, is provided with a locking device which securely holds it in place while in transport, or while the hangers are being put in place, a pressure on a push button and a slight turn of the thumb piece being all that is necessary to securely lock or release it. The beam is unobstructed on top, allowing the riders to be placed at any point desired.

This balance has improved double rider attachment, agate edges and bearings, fall-away pan-rests, levels and leveling screws. The index is provided with a strong reading glass, which is easily detached and may be used for other purposes.

Dimensions of carrying case, 13 x 9 x 7½ inches. Weight of Style R and carrying case, 10 lbs.

Price, Style R, sensitive to 1-100 mg.....	\$150.00
Price, Style R, sensitive to 1-200 mg.....	165.00
In combination with style O, Portable Pulp Balance, extra	15.00



226

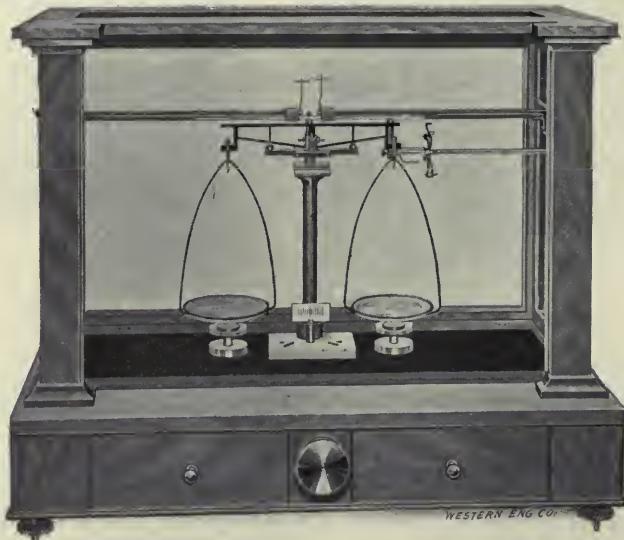
TROEMNER'S LATEST PORTABLE ASSAY BALANCE.

No.

226 The beam is of aluminum alloy, oxidized black with white divisions, and is divided both sides of the center knife edge into 50 divisions. The rider carriage has full clear sweep. Has fall-away beams and pan rests. Agate knives. The beam need not be taken off the fulcrum to carry it about, as it is held in its correct position by a specially made clamp, and can be carried or packed in any position without the least liability to become injured; it can be set up instantly for use.

The case is of old mahogany, finely finished, with glass sash front and back. Size, 7½ x 8¾ x 2½ inches. The outside case is of walnut, with lock and key and trunk strap with handle. Size, 8½ x 9½ x 5 inches. The handiest and most efficient Portable Assay Balance made; with set of platinum weights, 1 gramme to 1-10 milligramme.

Price	\$70.00
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227

THOMPSON'S ANALYTICAL BALANCE, STYLE NO. 28.

6-inch Beam.

Sensibility 1-20 Mg.

Capacity, 200 grammes in each pan.

No.

227 With this balance all weights below $\frac{1}{2}$ gramme are manipulated from outside of the case by means of the multiple Rider Attachment.
The balance has agate edges and bearings, star-wheel balancing device, skeleton hangers, rider-rod lock, levels and leveling screws.
Polished mahogany case with counterpoise door and glass base.
Dimensions, 20 x 17 x 10 inches.

Price, as illustrated and described \$145.00

Price, without Multiple Rider Attachment 120.00

THOMPSON'S ANALYTICAL BALANCE, STYLE NO. 29.

6-inch Beam.

Sensibility 1-20 Mg.

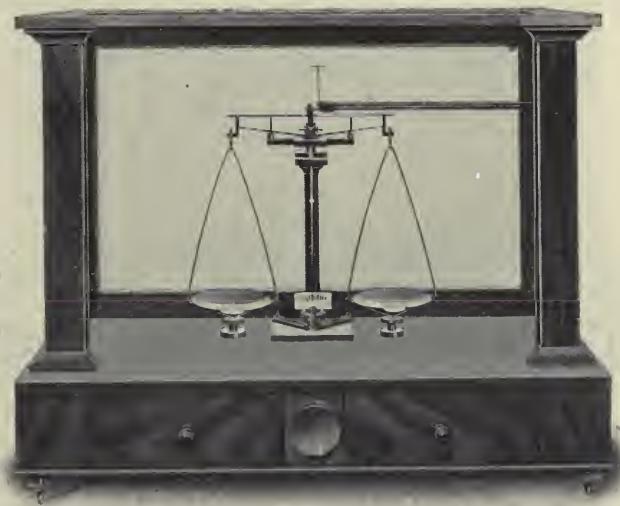
Capacity, 200 grammes in each pan.

No.

227a Has agate edges and bearings, star-wheel balancing device, double rider attachment, skeleton hangers, three-inch glass pans, fall-away pan-rests, rider-rod lock, levels and leveling screws.
Polished mahogany case with counterpoise door.
Dimensions, 20 x 17 x 10 inches.

Price \$110.00

Price, with Multiple Rider Attachment 135.00



228

THOMPSON'S CHEMICAL BALANCE, STYLE NO. 31.

6-inch Beam.

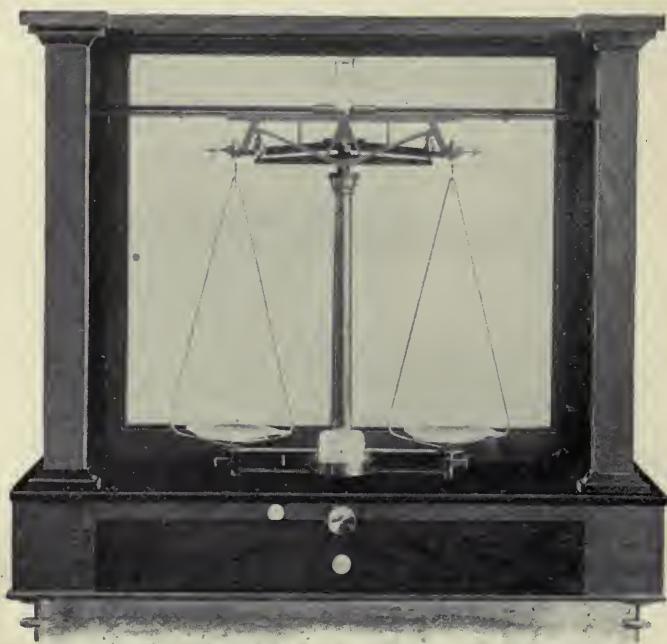
Sensibility 1-10 Mg.

No.

228 Has single rider attachment, steel knife edges and agate bearings, three-inch metal pans, fall-away pan-rests, levels and leveling screws.
Mahogany case with counterpoise door.
Dimensions, 20 x 17 x 10 inches.

Price \$ 65.00

Becker's, Kern's, Standinger's, or any other foreign make of Balances imported to order.
Prices quoted upon application.



229.

AINSWORTH'S ANALYTICAL BALANCE, TYPE Q.

7-inch Beam.

Sensibility, 1-20 Mg.

Capacity, 200 grammes.

No. 229 An analytical balance of precision with hard rolled nickel aluminum beam, agate edges and bearings, double rider apparatus, of improved construction, skeleton hangers.
Has two level vials set in base, extension glass sub-base covering entire top of base; all metal work gold plated except the center bearings and drop levers. Drop levers swing from center coincident with contact line of center edge and release all contacts with the edges when loading the balance.
Has finely polished French mahogany case with counterpoised sliding door in front and removable sliding door in back.
In the engraving the front door has been removed to better illustrate the balance.
Dimensions of case, 20 x 20 x 10 inches.
Weight, net, 20 pounds. Packed, 60 pounds.

Price	\$125.00
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AINSWORTH'S ANALYTICAL BALANCE, TYPE T.

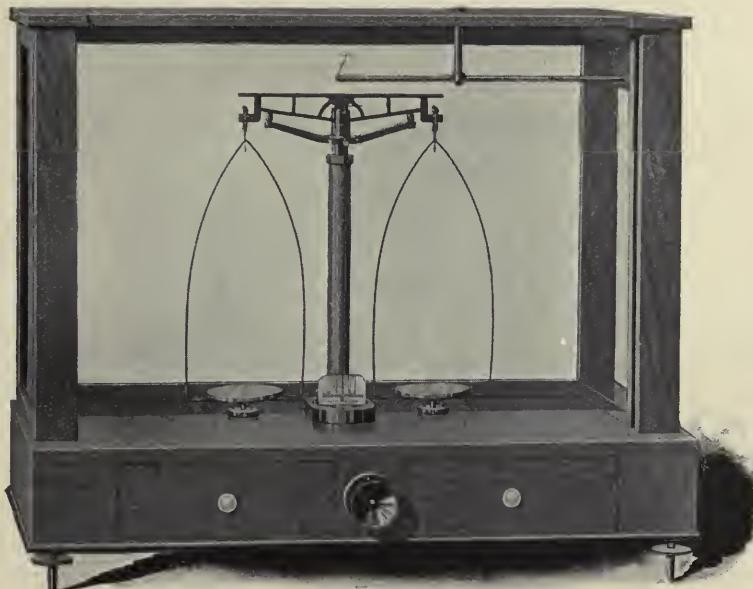
No. 230 Similar in all respects to Type Q, No. 229, but with 6-inch beam.
Price

Either of the above types can be furnished adjusted to a sensibility of 1-50 milligramme, for \$15.00 (list) additional.

AINSWORTH'S IMPROVED MULTIPLE RIDER CARRIER FOR TYPES Q AND T.

No. 230a Similar to that shown on page 35, but with capacity of 1000 milligrammes; rendering unnecessary the handling of fractional gramme weights.
Price

\$ 50.00



231

AINSWORTH'S TYPE L ANALYTICAL BALANCE.

6-inch—15.2 Cm. Beam.

Sensibility 1-10 (.1) Mg.—1-650 Gr.

Capacity, 200 grammes—8 ounces.

No.

231 This balance is of the latest improved construction, the yokes and pan-rests being operated by a single thumb-piece, the same as our button balance and having the same action. A balance of this construction can be operated more rapidly than where the pan-rests are operated by a separate button.
 Has agate bearings and single rider apparatus of improved construction. In French polished mahogany case with counterpoised sliding door.
 Dimensions of case, 20 x 17 x 10 inches—50 x 43 x 25 centimeters.
 Weight, net, 18 pounds—8.1 kilos. Packed, 50 pounds—22.5 kilos. Packed in zinc-lined case for export, 60 pounds—28 kilos.
 Dimensions, 27 x 21 x 15 inches—68 x 53 x 38 centimeters.

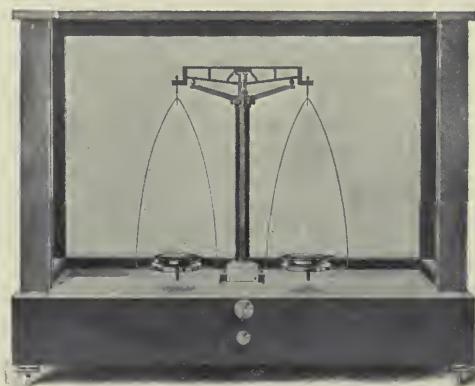
Price	\$65.00
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AINSWORTH'S TYPE LA ANALYTICAL BALANCE.

No.

231a Same as above, but with agate edges instead of steel.

Price	\$75.00
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232

AINSWORTH'S TYPE P ANALYTICAL BALANCE.

6-inch—15.2 Cm. Beam.

Sensibility 1-10 (.1) Mg.—1-650 Gr.

Capacity, 200 grammes—8 ounces.

No.

232 This type has agate bearings and 6-inch hard rolled brass beam. It is a good balance for rough analytical work and an excellent pulp balance.
Has French polished mahogany case with counterpoised sliding door.
In the engraving the counterpoised sliding door has been removed to better illustrate the balance.
Dimensions of case, 20 x 17 x 10 inches—50 x 43 x 25 centimeters.
Weight, net, 18 pounds—8.1 kilos. Packed, 40 pounds—18.1 kilos. Packed in zinc-lined case for export, 50 pounds—22.5 kilos.
Dimensions, 27 x 21 x 15 inches—68 x 53 x 38 centimeters.

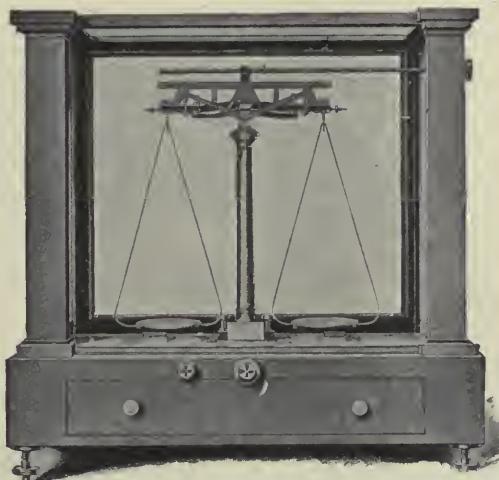
Price	\$45.00
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AINSWORTH'S TYPE PC ANALYTICAL BALANCE.

No.

232a Same as Type P, but with single rider apparatus.

Price	\$50.00
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234

TROEMNER'S ANALYTICAL BALANCE NO. 10.

7-inch Beam.

Sensibility 1-20 Mg.

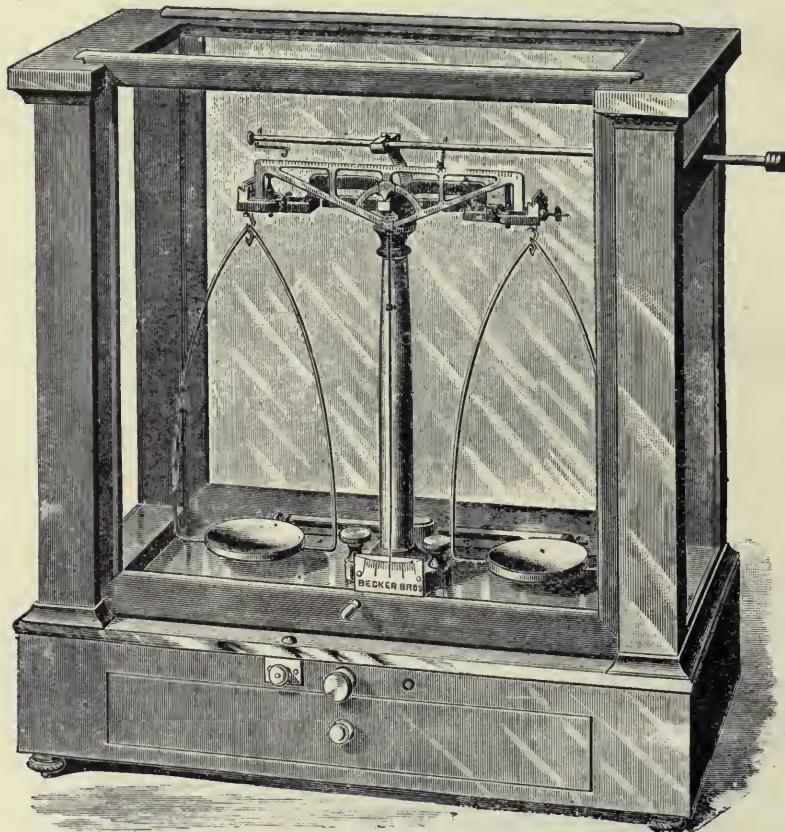
Capacity, 200 grammes.

No.

234 Short arm pure aluminum beam, agate planes and agate knives, no steel used, both arms of the beam are graduated; the pans also of aluminum; all the brass work is plated with gold; elegant mahogany case (old wood) with heavy plate-glass bottom; case has glass top to admit light freely; is provided with improved self-locking pan-arrest (push in the button, turn slightly to the left, this locks the arrest). All the workmanship is of the very finest.

This balance is in use at the U. S. Coast Survey, and by all the large steel and iron works.

Price \$125.00

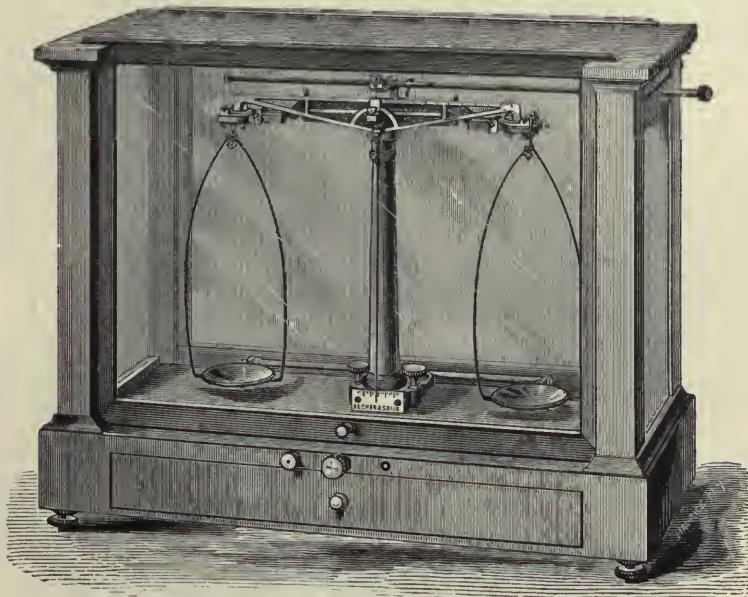


240-242

BECKER'S SHORT BEAM ANALYTICAL BALANCE NO. 8A.

No.

240	For a charge up to 200 grammes in each pan; sensible to 1-20 milligramme. In French polished mahogany glass case, front sliding frame counterpoised, with glass top to admit more light on rider. Mounted on plate-glass 5-16 inches thick. All bearings and knife edges of agate; beam graduated in 1-10 milligramme so that the rider can be placed on the center and used from the 0 point to either end. Provided with new improved arrangement for arrest of pans and beam, riders, apparatus for specific gravity and for weighing tubes. Pans 2½ inches diameter; width of pan support 4 inches.
	Price \$125.00
241	Same as No. 240, with aluminum beam, bows, etc..... 145.00
242	Same as No. 240, imported, gold plated 110.00



244-245

BECKER'S ANALYTICAL BALANCE NO. 7.

No.

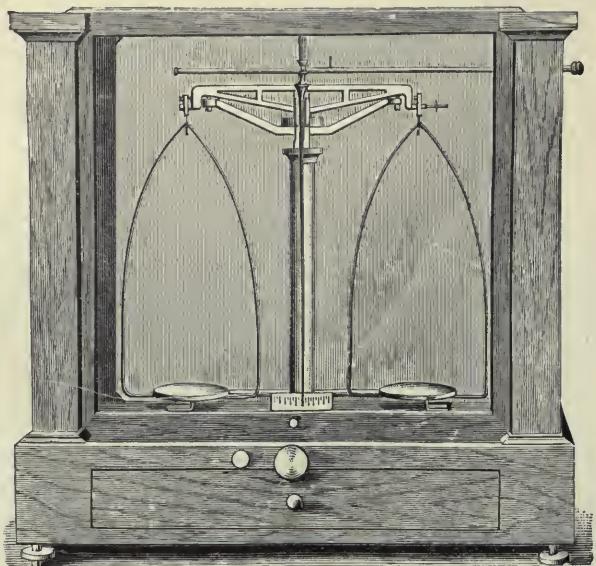
244 For a charge up to 100 grammes in each pan, in French polished glass case, front sliding frame counterpoised.

All bearings agate planes; with new improved arrangement for arrest of pans and beam; sensible to 1-20 milligramme with its full charge.

Provided with apparatus for specific gravity, rider and for weighing tubes. Beam divided into 1-10 part of milligramme. Pans 2½ inches diameter.

Price	\$85.00
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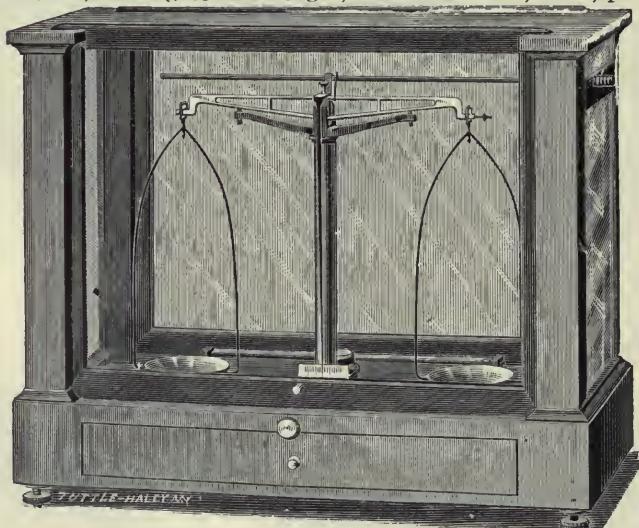
245 Same as No. 244, with agate knife edges	95.00
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246

BECKER'S SHORT BEAM BALANCE NO. 6A.

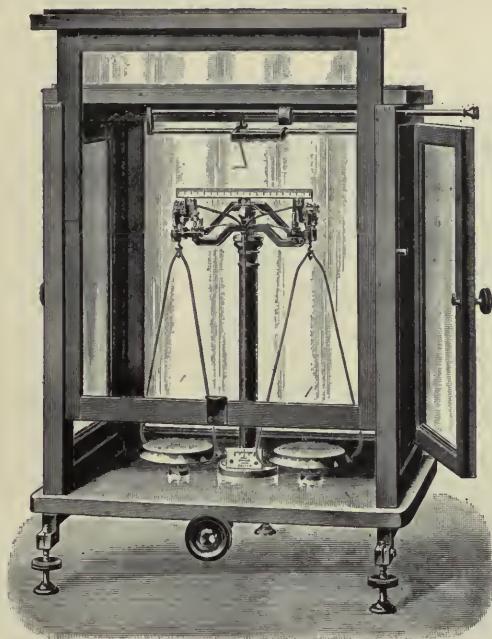
No.		
246	In mahogany French polished glass case, glass top for light on rider, front frame counterpoised. For a charge up to 100 grammes in each pan; sensible to 1-10 milligramme.	
	Beam graduated in 1-5 milligramme, provided with improved pan arrest, riders, agate bearings, etc.	
	Price	\$60.00
248	Same as No. 246, with agate knife edges	68.00
250	Same as No. 246, with agate knife edges, aluminum beam, bows, pans, etc..	80.00



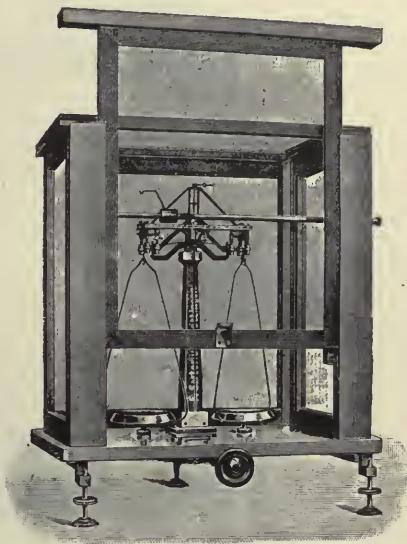
253

BECKER'S IMPROVED ANALYTICAL BALANCE NO. 6.

No.		
252	For charge up to 100 grammes in each pan; in French polished glass case, front sliding frame counterpoised; all bearings agate; sensible to $\frac{1}{4}$ milligramme with its full charge; with arrest for pans.	
	Price	\$45.00
253	Same as No. 252, improved with arrangement for rider.....	50.00



254-255



256

No.
254

BALANCE, SARTORIUS' ANALYTICAL NO. 5.

With straight beam of phosphor-bronze or aluminum, which likewise serves as a rider slide, circular arresters, adjustable knife-edges, compensating suspensions and mechanical rider displacement. The pans are platinum plated. The knife edges and planes are made of agate. The bottom is of black plate glass. This balance swings unusually rapidly.

It is largely used in university and factory laboratories.

Capacity 100 grammes, sensitiveness 1-10 milligramme.....	\$110.00
Capacity 200 grammes, sensitiveness 1-10 milligramme.....	120.00

255

BALANCE, SARTORIUS' ANALYTICAL NO. 6.

Same sensitiveness as No. 5, but not so elegantly finished; has pillar of bronzed cast iron, instead of lacquered brass.

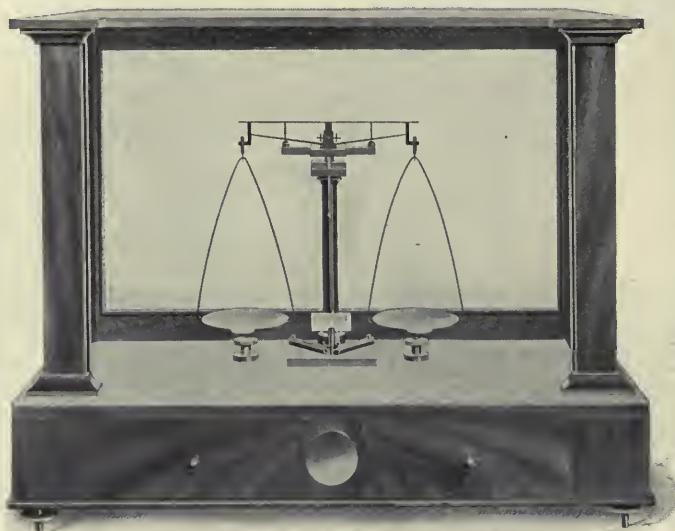
Capacity 200 grammes, sensitiveness 1-10 milligramme.....	\$ 90.00
Capacity 500 grammes, sensitiveness 15-100 milligramme	110.00

256

BALANCE, SARTORIUS' MODEL "AMERICA."

The compensating hangers are made in one piece, which prevents their falling apart, and being suspended on three points, they allow for uneven balancing; Magnalium short beam, rider arrangement, agate knife-edges and bearings, platinum plated pans; capacity, 200 grammes, sensitive to 1-10 milligramme; a well built, inexpensive balance, suitable for general analytical work. Highly recommended.

Price	\$65.00
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260

THOMPSON'S PULP BALANCE, STYLE NO. 33.

6-inch Beam.

Sensibility 1-10 Mg.

No.

260 Has steel edges and agate bearings, fall-away pan-rests, 3-inch metal pans. Mahogany case with counterpoised door. Dimensions, 20 x 17 x 10 inches.

Price \$55.00

THOMPSON'S PULP BALANCE, STYLE NO. 35.

7-inch Beam.

Sensibility 1-4 Mg.

No.

261 Has steel knife edges and agate bearings, adjustable pan-rests, 3-inch metal pans, fly balancing device, level and leveling screws. Mahogany case with counterpoised door. Dimensions, 17½ x 8 x 15 inches.

Price \$35.00

THOMPSON'S PULP BALANCE, STYLE NO. 36.

7-inch Beam.

Sensibility 1-4 Mg.

No.

261a Similar to Style No. 35, but has no arms to prevent beam from falling off when one hanger is removed, and center edge is not raised off bearing when balance is not in use. Mahogany case with counterpoised door. Dimensions, 17½ x 8 x 15 inches.

Price \$32.50



262

AINSWORTH'S TYPE M PULP BALANCE.

6-inch—15.2 Cm. Beam.

Sensibility 1-2 (.5) Mg. 1-130 Gr.

Capacity, 200 grammes—8 ounces.

No. 262 Has agate bearings, pan-rests, level and leveling screws, and is ordinarily furnished with 2½-inch pans, but 3-inch pans will be furnished when specified.
Has French polished mahogany case with counterpoised sliding door.
Dimensions, 17 x 15 x 8 inches—43 x 38 x 20 centimeters.
In the engraving the counterpoised sliding door has been removed to better illustrate the balance.
Weight, net, 10 pounds—4.5 kilos. Packed, 30 pounds—13.6 kilos. Packed for export in zinc-lined case, 36 pounds—16 kilos.
Dimensions, 24 x 13 x 18 inches—60 x 32 x 46 centimeters.

Price \$30.00

AINSWORTH'S PULP SCALE, TYPE N.

8-inch Beam.

Sensibility 1 Mg.

Capacity, 200 grammes.

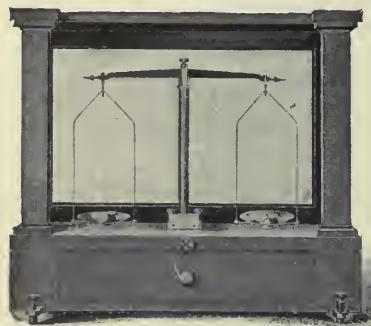
No. 263 Similar to Type M in general construction; without glass case; but mounted on polished mahogany base, into the drawer of which the beam, column, hangers and pans pack for carrying; has 2½-inch pans.
Dimensions of case, 12 x 6 x 3 inches.

Price, without weights..... \$15.00

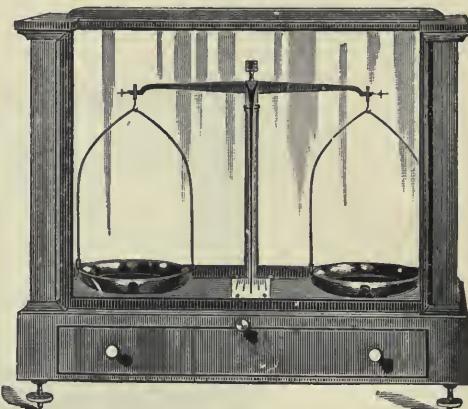
THOMPSON'S PULP SCALE NO. 37.

No. 263a Sensibility 1 milligramme. Mounted on polished mahogany base, without glass case, but has drawer in which the column beam hangers and pans can be packed for convenience in shipping. Fly adjustment. Pans 3 inches in diameter.

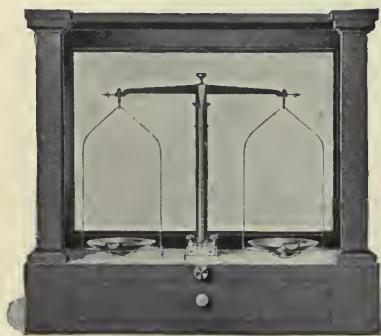
Price \$13.00



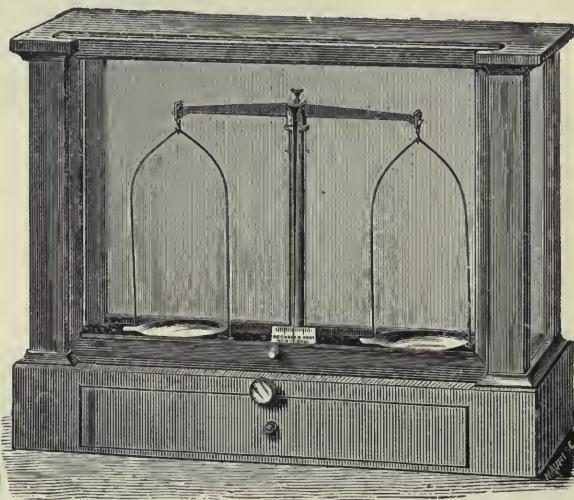
264



265



265a



267

TROEMNER'S PULP SCALE NO. 26.

No. 264 In French polished mahogany case, with counterpoised sliding door; has movable nickel pans, adjusting screws on beam; eccentric lift; glass level and leveling screws. Sensible to 1-30 grain; capacity, 2 oz. in each pan.
Price \$ 27.00

TROEMNER'S PULP SCALE NO. 25.

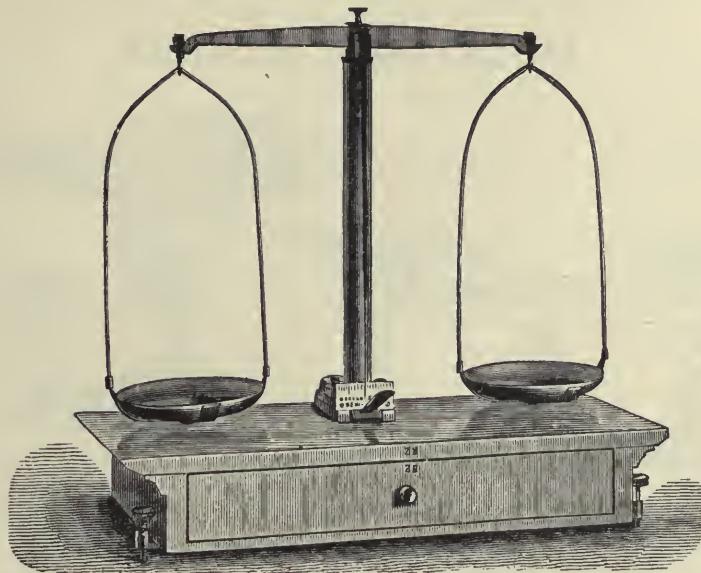
No. 265 In polished mahogany case, with counterpoised sliding door, leveling screws, glass level, adjusting screws at end of beam, 8-inch beam, 3-inch pans; capacity, 10 ounces.
Price \$ 30.00

TROEMNER'S PULP SCALE NO. 63.

No. 265a In French polished mahogany case, with counterpoised sliding door; scale is of finest finish, all lacquered pans of solid nickel; improved lifting arrangement; adjusting screws on beam; diameter of pans 2 $\frac{3}{4}$ inches; beam 8-inch; sensible to 1-50 grain.
Price \$ 22.00

TROEMNER'S PULP SCALE NO. 22.

No. 266 Without case, on French polished box with drawer, lacquered brass beam 10 inches long, movable nickel-plated brass pans 4 inches diameter. Capacity, 10 ounces; sensible to 1-30 grain.
Price \$ 18.00



273

PULP SCALE NO. 16

No. 267 In French polished glass case, with counterpoised sliding door, eccentric for lifting bows and movable pans. For a charge up to 2 oz. in each pan; sensible to 1-60 grain or 1 milligramme.
Price \$ 22.00

PULP SCALE NO. 18.

No. 268 Same as No. 267, but for a charge up to 5 oz. in each pan. Sensible to 1-30 grain.
Price \$ 26.00

PULP SCALE NO. 20.

No. 269 Same as No. 267, but for a charge up to 10 oz. in each pan. Sensible to 1-30 grain.
Price \$ 35.00

PULP SCALE NO. 22.

No. 270 Same as No. 267, but for a charge up to 20 oz. in each pan. Sensible to 1-20 grain.
Price \$ 42.00

PULP SCALE NO. 14.

No. 271 On French polished box with drawer, eccentric for lifting bows and movable pans.
Can be charged up to 2 oz. in each pan. Sensible to 1-50 grain.
Price \$ 11.00

PULP SCALE NO. 17.

No. 272 Same as No. 271, but for a charge up to 5 oz. in each pan. Sensible to 1-30 grain.
Price \$ 15.00

PULP SCALE NO. 19.

No. 273 Same as No. 271, but provided with set screws and level, for a charge up to 10 oz.
in each pan. Sensible to 1-10 grain.
Price \$ 22.00

PULP SCALE NO. 21.

No. 274 Same as No. 273, but for a charge up to 20 oz. in each pan. Sensible to 1-10 grain.
Price \$ 27.00

PULP SCALE NO. 23.

No. 275 Same as No. 273, but for a charge up to 50 oz. in each pan. Sensible to $\frac{1}{2}$ grain.
Price \$ 35.00

MOISTURE SCALES



281

282

NEW MOISTURE SCALE.

No.

281 Designed and manufactured exclusively by The Denver Fire Clay Company. The scale is so constructed that on using a moisture charge of two pounds the sliding weight on the beam indicates the exact per cent. of loss or moisture. **Example:** Place a 2-pound weight on left-hand platform, counterpoised with ore to be tested for moisture on the right; then dry the sample so weighed and place on same platform as before, and counterpoise by sliding weight on beam, when you read off the ounces lost and per cent. of loss. For absolute accuracy and simplicity it has no equal. Any other weight or charge may be used, when a simple calculation gives correct per cent. of moisture. This scale is also useful for ordinary weighing purposes. Including 2-pound weight, tin scoop and tare weight.

Price \$ 10.00

MOISTURE SCALE.

No.

282 Used at smelting and similar plants for determining the percentage of moisture in ores, etc. The ordinary capacity scale is made to weigh a sample of 50 ounces, but special scales are manufactured to order of other capacities as described below. The scale beam has two rows of graduation, the upper row giving the weight in ounces, or pounds, and fractions thereof; the lower row giving the percentages. The percentage row on all scales is figured 100 to 0 per cent., by 1 per cent., and thus the reading gives the direct percentage of loss. The given amount of ore is first weighed, then dried or roasted, and reweighed to note the loss of moisture or sulphur. From 50 oz. to $\frac{1}{2}$ oz. capacity.

Price \$ 10.00

283 Same as No. 282, from 50 oz. to $\frac{1}{2}$ oz., but with fractional graduations of 1 x 1-10 per cent. on tip end of the main beam, and both the main and fractional beams are fitted with patent latch poises.

Price \$25.00

284 Same as No. 282, from 2 kilos to 10 grammes 10.00

285 Same as No. 283, Metric, with fractional graduation 25.00

No.
286

MOISTURE SCALE.

Special modification of Standard Moisture Scale as adopted by the American Smelting & Refining Company and Taylor & Brunton as their standard.

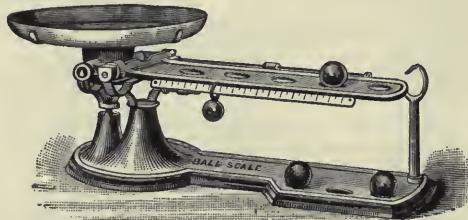
Description.

This scale is similar to No. 283, but is provided with two beams, each graduated on both sides. Main beam graduated to 4½ lbs. avoirdupois; percentage row to 90 per cent. Fractional beam graduated to ½ lb. avoirdupois; percentage graduation from 1-10 of 1 per cent. to 10 per cent. Scale is fitted with seamless brass scoop. Beams being marked on both sides enables both buyer and seller to read the weights.

Price Net \$20.00

Bunge's, Becker's,
Sartorius', Kern's and
other makes of Balances
imported to order for
institutions of learning
FREE OF DUTY

BULLION SCALES



290-290a

BALL SCALE NO. 124.

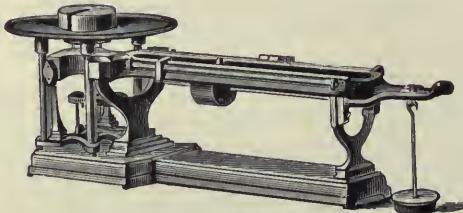
No.
290 A new and elegant counter scale; our latest modification in weighing apparatus. Scale has 10-inch nickel pan; has extra sliding poise to balance bottles, etc.; will weigh from $\frac{1}{4}$ oz. to 16 lbs. without the use of ordinary weights; elegantly finished in nickel and bronze. In every respect a perfect scale, and saves the cost of a set of weights; diameter of pans 10-inch, capacity 16 lbs.

Price \$14.00

BALL SCALE.

No.
290a Same as above, in Metric Standard, capacity 6 kilos, divisions on the beam 10 grammes.

Price \$14.00



291-291a

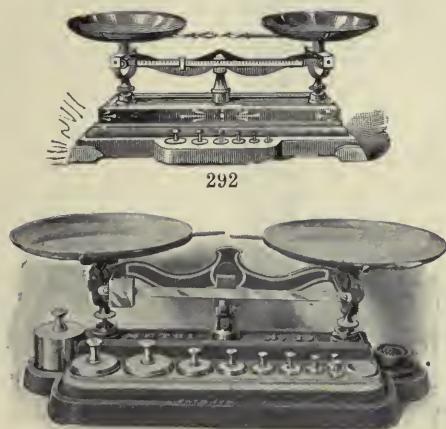
D. F. C. CO.'S NEW BULLION SCALE.

No.
291 A good scale for all purposes where weighing closer than 2-100 oz. is not required. It is provided with weighing beam and two sliding poises; one side is divided into fifty parts, each part representing 2-100 oz.; the other side is divided into thirty-five parts, each part representing 1 oz. troy. A bar with a sliding poise is placed under the weighing beam for the purpose of balancing bullion pan. Capacity, 600 oz. Weights included.

Price \$25.00

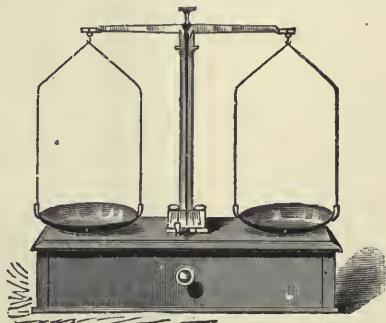
291a Capacity, 1,000 oz. Weights included 30.00

BULLION SCALES



292

293a



293

TROEMNER'S BULLION SCALE NO. 189.

No. 292 With 6-inch nickel pans; all bearings are of agate, to insure the highest attainable sensibility with endurance. Sliding beam on front, divided into pennyweights and grains, by which the exact weight of an article is quickly ascertained, thus doing away with small weights; a set of weights (12 oz.) is arranged on a platform on front of scale. Scale is sensitive to $\frac{1}{2}$ grain.

Price \$18.00

TROEMNER'S U. S. MINT BULLION SCALES, FIG. 139.

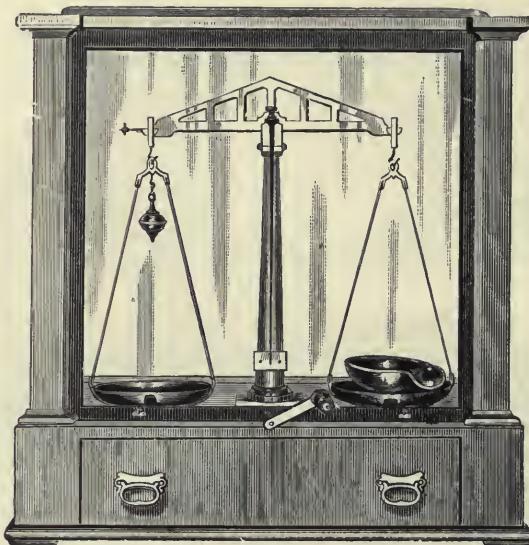
No. 293 These are strictly first-class in every respect, mounted on polished walnut box, with drawer; a full set of weights included.

No.	0	1	2	3	4
Capacity	64	32	16	8	4 oz.
Each	\$24.00	15.00	12.00	10.00	8.00

TROEMNER'S METRIC SOLUTION SCALES, FIG. 801.

No. 293a An even balance scale for making rapidly Reagents or any other kind of composite solutions. The scale has two movable brass pans, and the weight rack is attached to the base of the scale, and in it are fitted the weights, which are made of solid brass. The scale is provided with a side beam in front, undivided, and is used for balancing the bottle or containers. With this scale can be made the most accurate solutions. Sensibility, $\frac{1}{2}$ grammie.

No.	Diam. of Pans.	Capacity.	Price.
10	9 in.	5 kilos to 1 grammie	\$18.00
8	5 $\frac{1}{2}$ in.	1 kilo to 1 grammie	15.00



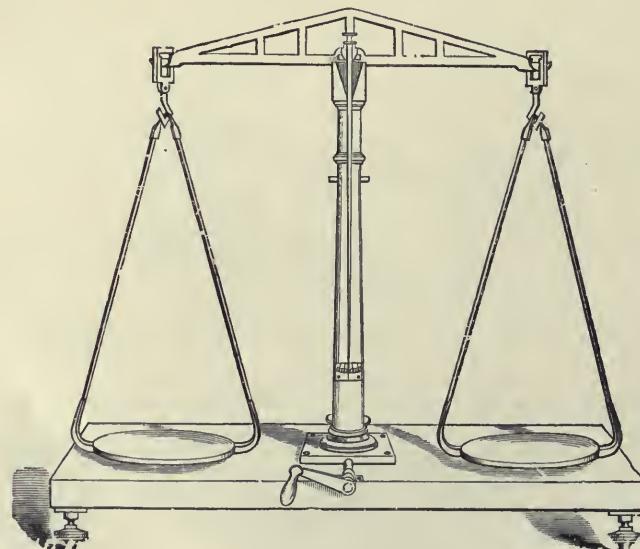
294

TROEMNER'S BULLION AND SPECIE SCALE, NO. 24.

No.

294 Of the very finest finish; in French polished glass case, with counterpoised door, sliding upward; open beam; 8-inch movable nickel pans; capacity, 200 oz. and sensible to $\frac{1}{2}$ grain; has extra pan for loose substances; inside measure of case is 35 inches high, 30 inches wide. Complete with a full set of weights, 50 oz. to 1 grain, being neatly fitted inside of the drawer.

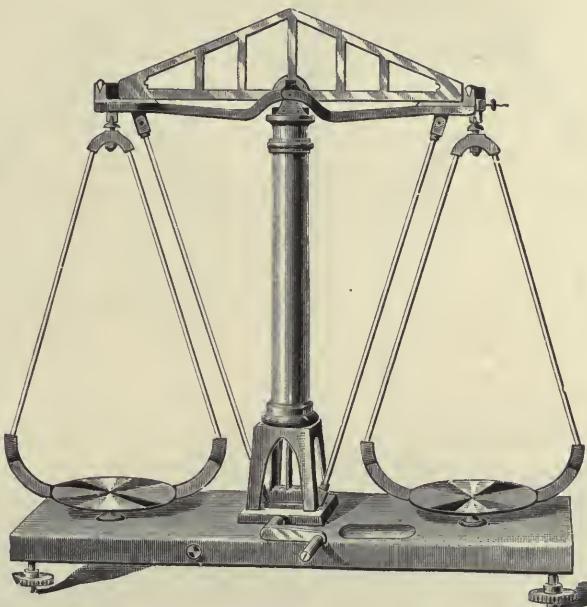
Price	\$97.50
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295

294a Same as No. 294, with weights 100 oz. and down (200 oz. in all).

Price	\$107.50
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296

TROEMNER'S BULLION AND SPECIE SCALE, NO. 170.

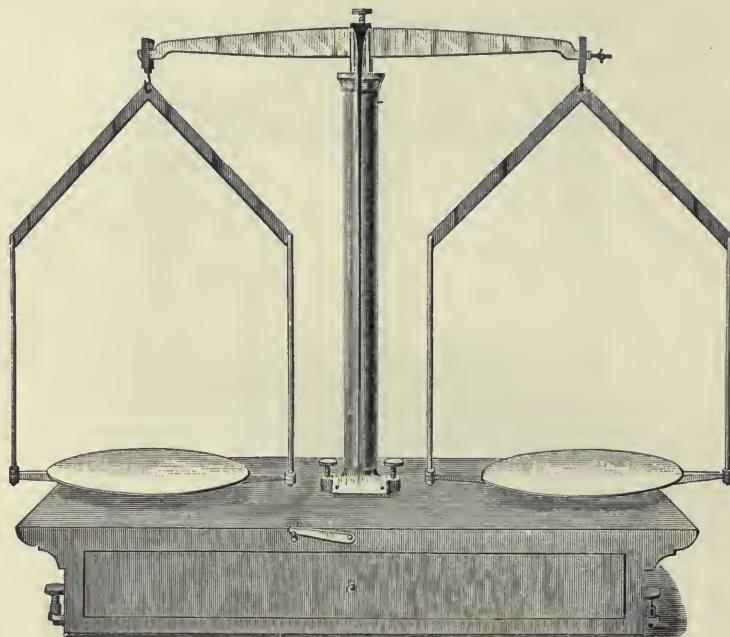
No. 295	With brass beam, pans and bows; improved lifting arrangement; glass level and leveling screws; adjusting screws on beam, etc. Complete, with full set of weights, large weights of bronzed iron, from 50 oz. down of brass, in a walnut block; capacity 500 oz.	
Price	\$ 95.00	
295a	Same as 295, capacity 1,000 oz.	120.00
295b	Same as No. 295, capacity 1,500 oz.	150.00

TROEMNER'S BULLION AND SPECIE SCALE, NO. 175.

No. 296	Will carry 2,000 oz. in each pan; open brass beam, pans and arches also of brass, with complex levers to arrest the beam and its hangings; platform of iron, neatly japanned; adjusting screws on beam, glass level and leveling screws; sensible to 1-200 of an oz. Without weights.	
Price	\$210.00	

TROEMNER'S BULLION AND SPECIE SCALE, NO. 176.

No. 296a	Same as No. 296; capacity 500 oz. in each pan; sensible to 1 grain. Without weights.	
Price	\$160.00	



297

BULLION AND SPECIE SCALE, NO. 23.

No. 297	On French polished box with drawer; provided with eccentric for lifting bows and movable pans. For 50 oz. in each pan. Sensible to $\frac{1}{2}$ grain with its full charge. Price	\$35.00
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BULLION AND SPECIE SCALE, NO. 25.

No. 297a	Same as No. 297. For 100 oz. in each pan. Sensible to $\frac{1}{2}$ grain. Price	\$49.50
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BULLION AND SPECIE SCALE, NO. 27.

No. 297b	Same as No. 297. For 300 oz. in each pan. Sensible to 1 grain with its full charge. Price	\$66.00
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BULLION AND SPECIE SCALE, NO. 24.

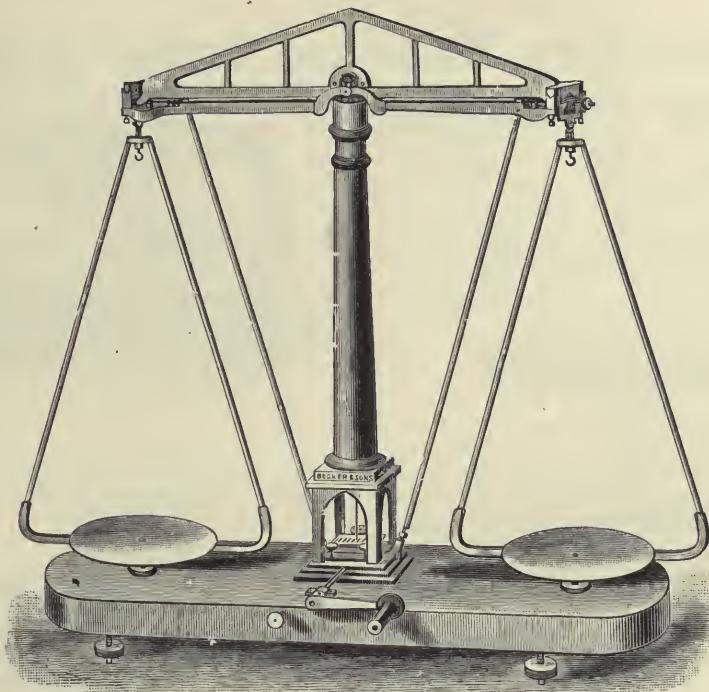
No. 298	Same as No. 297, but in French polished glass case. For 50 oz. in each pan. Sensible to $\frac{1}{4}$ grain. Price	\$55.00
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BULLION AND SPECIE SCALE, NO. 26.

No. 298a	Same as No. 298, but for 100 oz. in each pan. Sensible to $\frac{1}{4}$ grain. Price	\$76.00
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BULLION AND SPECIE SCALE, NO. 28.

No. 298b	Same as No. 298, but for 300 oz. in each pan. Sensible to 1 grain. Price	\$100.00
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299

BULLION AND SPECIE SCALE, NO. 29.

No.		
299	Carrying 500 oz. in each pan. Sensible to 1 grain with its full charge. All bearings agate planes, with new improved construction for the arrestation of beams and pans. Provided with set screws and level.	
	Price	\$165.00

BULLION AND SPECIE SCALE, NO. 31.

No.		
299a	Same as No. 299. For 2,000 oz. in each pan. Sensible to 2 grains with its full charge.	
	Price	\$210.00

BULLION AND SPECIE SCALE, NO. 33.

No.		
299b	Same as No. 299. For 5,000 oz. in each pan. Sensible to 2 grains with its full charge.	
	Price	\$600.00

BULLION AND SPECIE SCALE, NO. 30.

No.		
300	In French polished mahogany glass case, with counterpoised front sliding frame. For 500 oz. in each pan. Sensible to $\frac{1}{2}$ grain with that charge.	
	Price	\$250.00

BULLION AND SPECIE SCALE, NO. 32.

No.		
300a	Same as No. 300. For 2,000 oz. in each pan. Sensible to 1 grain.	
	Price	\$300.00

BULLION AND SPECIE SCALE, NO. 34.

No.		
300b	Same as No. 300. For 5,000 oz. in each pan. Sensible to 1 grain.	
	Price	\$750.00

Laboratory, Hand and Pocket Scales



301



303

No.

301 **Army Prescription Scale, No. 9.** On polished box; scale can be taken apart and packed away in drawer of box; all parts nickel-plated; including a set of weights from 2 drams to $\frac{1}{2}$ grain.

Beam	6 in.	8 in.
Each	\$3.00	5.00



304



304a

303 **Troemner's "Climax" Box Prescription Scale, No. 120.** Has $2\frac{3}{4}$ -inch nickel-plated pans; cherry-mahogany box; marble top; hinged cover; reliable and substantial \$12.50

304 **Troemner's Box Prescription Scale, No. 12.** In French polished ebony box with marble top, which has counter-sunk basin in it to hold the weights; pans are of solid nickel; scale is sensible to 1-30 grain; has glass cover provided with stop hinges, all of the finest workmanship, and one of the most popular scales we have ever introduced. To avoid corrosion and cleaning no metal parts are put on the outside of the box, excepting the pans and hinges. Pans 3 and $3\frac{3}{4}$ -in.

No.	12	13
Each	\$18.00	20.00

304a **Troemner's Bakers' Scale,** so named as it was originally made for their use, being a small balance with large pans; length 12 inches; width 9 inches; height 5 inches; pans 5 inches in diameter; beam graduated up to 5 grammes and divided into 1-10 gramme; a set of accurate brass weights in block which is fastened to the front of the scale, are included; capacity, 200 grammes to 1-10 gramme.....

8.00



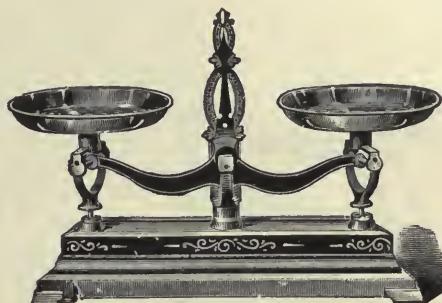
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306



307

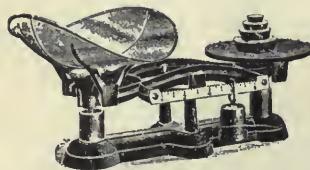


308-309



309a

No.					
305	Troemner's Dispensing Scale, No. 6.	With side beam and sliding weight, to weigh 4 oz. Handsomely finished; has 3½-inch nickel-plated movable pans; a side beam in front of scale with a sliding weight; this beam is divided into 120 divisions, each division representing one grain; an extra row of metric divisions is placed on bottom edge of beam, each representing one decigramme. Platform or shelf is attached to base of scale, in which are fitted a set of solid brass Troy weights, 2 oz. and down. Sensible to ½ grain. Capacity 4 oz.	\$8.00		
306	Troemner's Laboratory Scale, No. 7.	Specially designed for laboratory and pharmaceutical work; has 6-inch movable nickel pans; will carry 1 lb. in each pan; sensible to ½ grain; with a full set of weights, running from 8 oz. Troy and down to 1 grain, neatly fitted in a projecting shelf attached to the base. Metric weights furnished in place of Troy when so desired	9.00		
307	Balance, Harvard Trip.	With 2 six-inch round porcelain plates and side beam for laboratory work; capacity, 1 kilogramme to 1-10 grammes ..	6.50		
308	Troemner's Robervahl Scale, No. 75.	Neatly ornamented in gold lines; heavy brass pans and brass indicator.			
	No.	2	3	4	
	Capacity	15	10	5 lbs.	
	Pans	9	8	6 in.	
	Each	\$7.50	6.00	5.00	
309	Robervahl Scale, French Make.	Cheaper, for coarse weighing.			
	Capacity	1	2	5	10 lbs.
	Pans	4¾	5	5¾	7¾ in.
	Each	\$2.75	3.25	4.00	5.00
309a	Union Scale,	with two platforms, No. 508, especially convenient for a large variety of uses; capacity from ½ oz. to 30 lbs. in the scoop, and to 240 lbs. on the platform, which measures 10½ x 13½ inches. Price, with tin scoop	15.00		
309b	Union Scale.	A more simple form, with only the large platform, but also with tin scoop	7.50		



310



311

No.

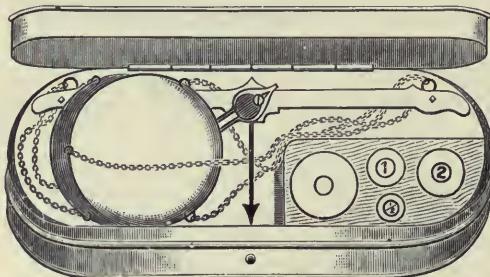
310 D. F. C. Co.'s Tin Scoop Scale, with Japanned Weights. Weighing from 4 lbs. to $\frac{1}{2}$ oz. Scale is strong and well made and accurate; has brass beam \$4.00

310a D. F. C. Co.'s Flux Scale. Like No. 310, with side beam graduated to $\frac{1}{4}$ oz.; including set of japanned weights and tin scoop.

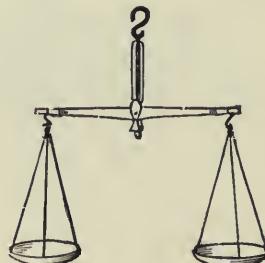
No.	707	706	705	922
Capacity	6	10	16	25 lbs.
Each	\$7.75	10.00	12.75	20.75

311 Troemner's Ebony Box Scale, No. 89. With gold lines; gilt dial; heavy nickel-plated pans; marble top.

No.	0	1	2
Capacity	10	15	25 lbs.
Pans	7	8	9 in.
Each	\$12.00	14.00	16.00



312



313

312 Hand Scales, s. c., "Miner's Pocket Scale," in lacquered box, with set of weights down to $\frac{1}{2}$ grain, inside of box, good bearing and knife edges.

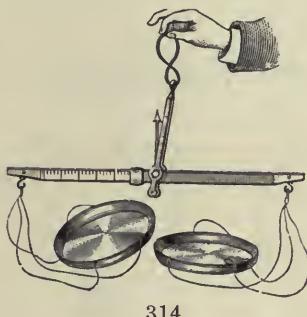
Capacity	1	2	4 oz.
Each	\$2.00	2.50	3.00

313 Hand Scales, with fine brass beams and horn pans, suspended by silk cords, fine steel bearings, very sensitive.

Beam	4	5	6*	7	8	10 in.
Pans	1 $\frac{1}{2}$	2	2 $\frac{1}{2}$	3	3 $\frac{1}{2}$	4 $\frac{1}{2}$ in.
Each	\$1.20	1.50	1.75	2.00	2.50	3.00

THE DENVER FIRE CLAY COMPANY.

65



314



315



316



317



318



320a

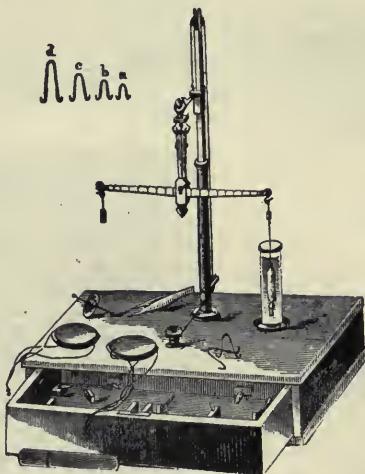
No.

314	Hand Scales, with Sliding weight, on graduated brass beam, horn pans, very delicate and sensitive. No weights needed.					
	To weigh 5 grains, divided into 1-10 grains	\$3.00				
	To weigh 15 grains, divided into $\frac{1}{2}$ grains.....	.35				
	To weigh 25 centigrammes, divided into $\frac{1}{2}$ centigrammes...	3.00				
315	Hand Scales, in box, brass beam and pans, with weights .....	.85				
316	Scale Pans, with handles.					
	Glass, $2\frac{1}{2}$, $2\frac{3}{4}$, 3 in.....	Pair	.40			
	Nickel, $2\frac{1}{2}$, $2\frac{3}{4}$, 3 in.....	Pair	.75			
	Aluminum, $2\frac{1}{2}$, $2\frac{3}{4}$, 3 in.....	Pair	.75			
317	Scale Pans, for counter scales, nickel-plated.					
	Size 6 7 8 9 10 in.					
	Pair \$1.00 1.50 2.00 2.50 3.00					
318	Scale Pans, of aluminum, for assay balances $\frac{3}{4}$ -inch diameter, accurately checked	Pair	1.00			
318a	Scale Pans, of glass, for assay balances $\frac{3}{4}$ -inch diameter, accurately checked	Pair	1.50			
319	Scale Glass Feet, for holding leveling screws of balances, giving perfect insulation	Set of four	.40			
319a	Scale Rubber Pads, for same purpose	Each	.20			
320	Scale Watchglasses, glass, accurately counterpoised; for analytic work. Sizes $2\frac{1}{2}$, 3, $3\frac{1}{2}$ inches diameter	Pair	1.00			
320a	Scale Covers of Rubber Sheetings. Dust proof. Made any size to order. In ordering please give exact measures of top of case; also extreme height	Each	1.50			
320b	Weighing Capsule, of pure nickel, $4\frac{1}{2}$ inches long	Each	.40			

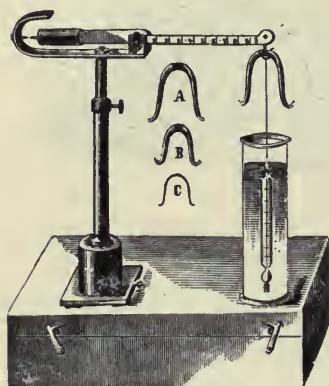
Blow Pipe and Specific Gravity Balances



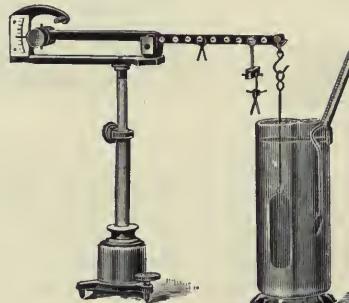
321



322



323



324



325

No.			
321	Plattner's Blow Pipe Balance. For blow pipe analysis sensitive to 1 milligr. Nickel-plated, with set of weights from 1 gramme to 1 milligr., in polished wooden case	\$22.50	
322	Mohr's Specific Gravity Balance. For both liquids and solids, with Reimann's Patent Thermometer, riders, glass cylinder, forceps, also extra pans for regular weighings	20.00	
323	Westphal's Specific Gravity Balance. For liquids only, in polished box, with movable support and Reimann's Patent Thermometer.....	15.00	
	Reimann's Thermometer	3.00	
	Set of Rider Weights	1.50	
324	Sartorius' Hydrostatic Balance. For specific gravity determination of liquids, complete in case	30.00	
325	Prof. Jolly's Spiral Balance. For rapid and exact determination of the specific gravity of minerals, with 3 assorted spirals, on wooden support and scale on mirror glass	20.00	

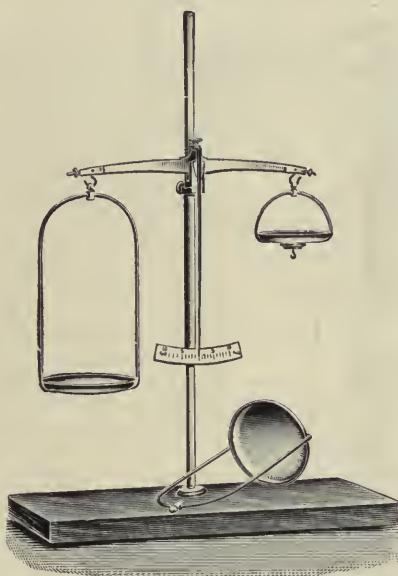


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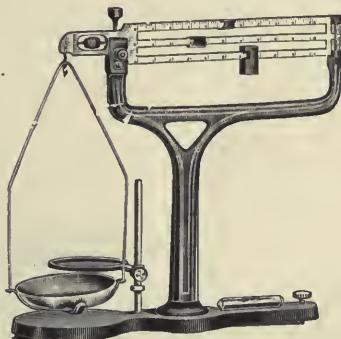


327

No.			
326	Balance, Hydrometer Scale. For specific gravity weighings; 9-inch beam, 5-inch pans; capacity 100 grammes	\$6.00	
327	Balance, Hydrometer Scale. With adjustable beam rest and rod inside the pillar, so the beam can be raised 6 to 9 inches higher to weigh liquids in cylinders. Beam, 12 inches; pan, 5 inches; capacity, 500 grammes	12.00	

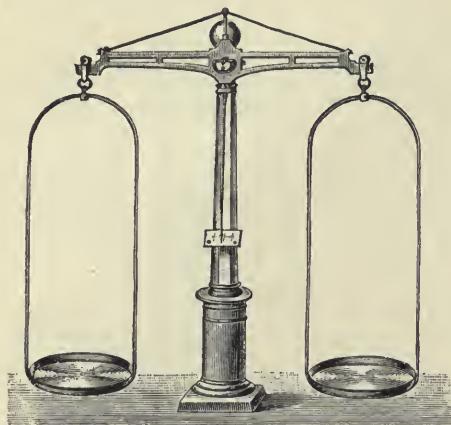


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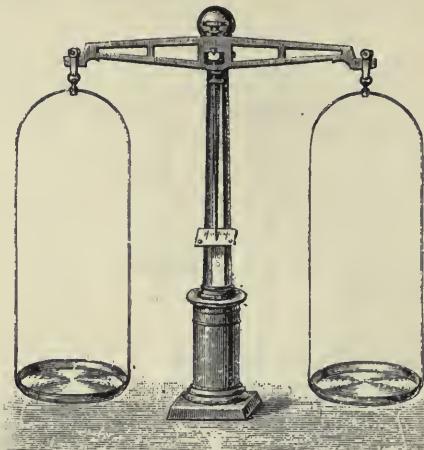


328a

328	Balance, Combination. For regular and specific gravity weighings; beam can be raised on the brass column. Beam, 11 inches; pans, 4 inches; column, 20 inches; capacity, 250 grammes.....	\$ 8.00
328a	Balance, New "Alward" Triple Beam. A convenient, time-saving form in chemistry and physics work, with sliding, non-detachable weights, compactly fitting the beams. Capacity, 111 grammes. The upper beam has centigramme divisions; the middle beam, 1 gramme; the lower beam, 10 grammes. The sensibility is 3 milligrammes with load. Price complete	20.00

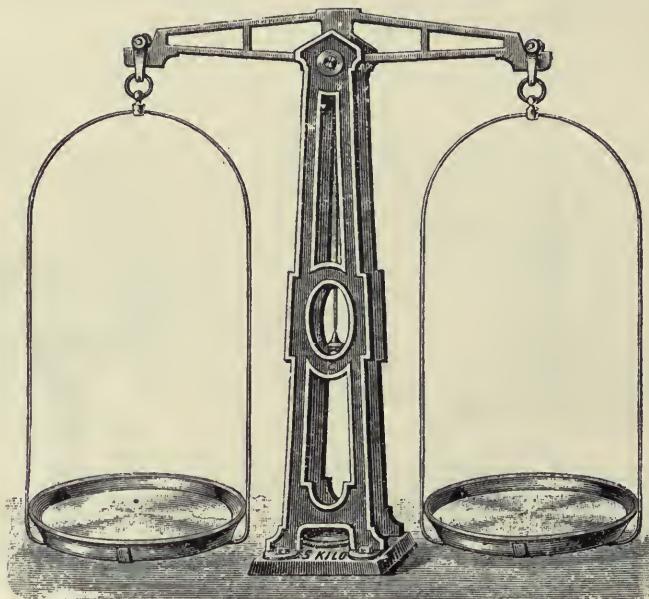


328b



328c

328b Balance, Mohr's, for assaying, laboratory and prescription work; all brass, sensible to 1-20 of a grain, with a charge up to two pounds; beam with balancing wires and prismatic steel bearings \$16.00
 328c Ditto, without balancing wires; sensible to 1-20 grain 15.00



328d

328d Balance, for weighing larger vessels; specially adapted for making standard solutions, etc. Beam of brass, lacquered, with elegant bronze iron pillar.

Capacity	1	3	5	10 Kilos.
Dia. of Pans	16	19	22	26 Ctm.
Price	\$10.00	12.50	15.00	20.00

May also be used as bullion balance.

Weights of Precision for Analytical, Assaying and Scientific Purposes



329

No.				
329	Gramme Weights, Ainsworth's Button Weights.	These metric weights are guaranteed accurate subdivisions of the International Standard Kilogramme as furnished by the Bureau of Standards at Washington.		
	No. 100.	One gramme (platinum) down to 1 mg. and 2 riders; error limit, + or — .005 mg.	Price	\$25.00
	No. 150.	One gramme (platinum) down to 1 mg. and 2 riders; error limit, + or — .01 mg.	Price	15.00
	No. 200.	One gramme (platinum) down to 1 mg. and 2 riders.	Price	10.00
329x	Thompson's Precision Weights.	Blue seal for gold assaying; error limit, + or — .005 milligramme.		
		1 gramme (platinum) down to 1 mg. and 2 riders, per set.....		25.00
		50 milligrammes (platinum) down to 1 mg. and 2 riders, per set		12.00
		set		12.00
	Thompson's Precision Weights. Red seal for silver assaying; error limit + or — .01 mg.			
		1 gramme (platinum) down to 1 mg. and 2 riders, per set.....		15.00
		100 milligrammes (platinum) down to 1 mg. and 2 riders, per set		8.00



329a

329a Gramme Weights, Ainsworth's Analytical.

No. 300	10	grammes	down to 1 milligramme, and 2 riders.	Price.....	\$11.00
No. 350	20	"	1 "	2 "	12.00
No. 400	50	"	1 "	2 "	14.00
No. 450	100	"	1 "	2 "	16.00



329b

No.

329b Assay Ton Weights, Ainsworth's.

No. 650 One assay ton to 1-20, brass. Price \$4.00

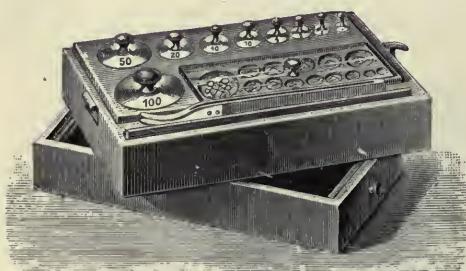
No. 700 Four assay tons to 1-20, brass. Price 6.00

329T Assay Ton Weights, Thompson's.

One assay ton to 1-20 4.00

Four assay tons to 1-20 6.00

The assay ton contains as many milligrammes (29,166) as there are Troy ounces in a ton (2,000 lbs.) avoirdupois; hence, if one assay ton of ore yields a button weighing one milligramme, the ore carries one ounce to the ton.



330



330

330 Gramme Weights, Analytical, Imported. Of the very highest standard of accuracy and precision, either in hinged box or in box with loose cover.

50	grammes	down to	1	milligramme	and	3	riders,	platinum-plated	...	\$15.00
100	"	"	1	"	"	3	"	"	...	18.00
50	"	"	1	"	"	3	"	gold-plated	...	12.00
100	"	"	1	"	"	3	"	"	...	15.00



331



333

No.

331 Gramme Weights, Troemner's.

	1 platinum gramme, down to 1-10 milligramme	\$10.50
	1 " " " 1-10 " specially checked	15.00
	10 gramme piece, down to 1 milligramme	11.00
	20 " " " 1 "	12.00
Two	20 " " " 1 " and 3 riders	13.00
	50 " " " 1 " " 3 "	14.00
	100 " " " 1 " " 3 "	16.00
	200 " " " 1 " " 3 "	20.00
	500 " " " 1 " " 3 "	24.00
	1000 " " " 1 " " 3 "	29.00

332 Grain Weights, Troy, Troemner's.

	10 platinum grains, down to 1-100 grain	9.50
	10 " " " 1-1000 "	10.50
	100 grain piece down to 1-100 grain	11.00
	1000 " " " 1-10 " and 3 riders	12.00
	1000 " " " 1-100 " " 3 "	13.00
	1000 " " " 1-1000 " " 3 "	14.00

333 Assay Ton Weights, Troemner's.

	4 A. T. to 1-20 A. T.	6.00
	1 A. T. to 1-20 A. T.	4.00

334 Milligramme Weights, Platinum, Troemner's. Single.

Milligrammes	1000	500	200	100	50	20	10	5	2	1
Each	\$1.50	1.00	.75	.60	.40	.30	.25	.25	.25	.25

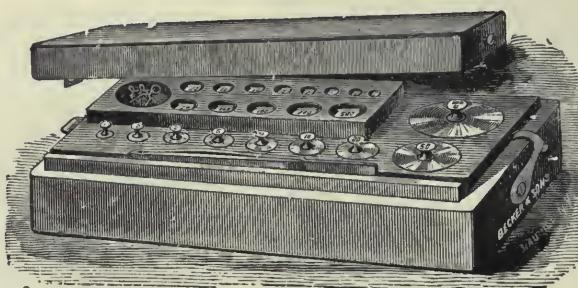
335 Milligramme Weights, Fractional.

Set comprising one $\frac{1}{2}$ milligr., two 1-5 milligr., one 1-10 milligr

\$1.00

336 Riders, Troemner's. Single.

Milligrammes	12	10	6	5	2	1	$\frac{1}{2}$
Each	\$0.25	.25	.25	.25	.40	.40	.50



337

No.

337 **Gramme Weights, Becker's.** In French polished boxes lined with velvet, every piece fitted separately and adjusted to the utmost accuracy; brass weights lacquered, the fractions of the gramme are platinum, except those below 20 milligrammes, which are made of aluminum.

No. 1	1 platinum gramme, down to 1-10 milligramme	\$10.60
No. 2	10 gramme piece, down to 1-10 milligramme	12.00
No. 3	20 " " " 1 " and 3 riders	14.00
No. 4	50 " " " 1 " " 3 "	16.00
No. 5	100 " " " 1 " " 3 "	18.00
No. 6	200 " " " 1 " " 3 "	24.00
No. 7	500 " " " 1 " " 3 "	28.00
No. 7A	1000 " " " 1 " " 3 "	35.00

338 **Gramme Weights, Becker's Imported.**

No. 1	1 gramme down to 1-10 milligramme	9.00
No. 2	10 " " 1-10 "	11.00
No. 3	20 " " 1 " and 3 riders	12.00
No. 4	50 " " 1 " " 3 "	14.00
No. 5	100 " " 1 " " 3 "	16.00

339 **Assay Ton Weights, Becker's.**

4 A. T. to 1-20 A. T.	6.00
1 A. T. to 1-20 A. T.	4.00

340 **Milligramme Weights, Becker's. Single.**

Milligramme	500	200	100	50	20	10	5	2	1
Ordinary, each	\$1.25	.75	.75	.50	.35	.35	.35	.30	.30
Specially checked, each	2.00	1.25	1.00	.75	.50	.50	.50	.50	.50

341 **Riders, Single, Becker's.**

Milligrammes	12	10	6	3	2	1 2-10	1	6-10
Each	\$0.30	.30	.30	.35	.35	.50	.50	.50

For Chemical, Pharmaceutical and Other Accurate Purposes



342

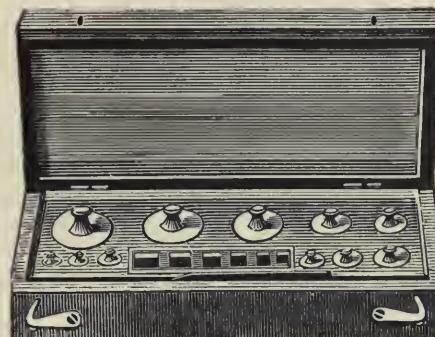


346

No.												
342	Milligramme Weights, German Silver.	From 5 down, of aluminum	500 milligrammes and down to 1 milligramme	Set	\$1.00							
343	Gramme Weights, Oertling's.	In round, ivory box, screw lid.	One gramme to 1 milligramme, with six 1-milligramme riders . . .	Set	12.00							
343a	Riders, Oertling's.	1 milligramme . . . . .			.25							
344	Riders, Ainsworth's.											

Milligrammes	1/2	1	2	5	6	10	12
Ordinary, each	\$0.25	.25	.25	.25	.25	.25	.25
Special checked, each	.50	.50	.50	.50	.50	.50	.50

345	Milligramme Weights, Ainsworth's, Platinum. Single.	Grade	Milligrammes	1000	500	200	100	50	20	10	5	2	1
a	Error limit + or - .005 mg.	{ Price											
		{ each \$5.00	4.00	3.00	2.00	1.75	1.50	1.25	1.00	1.00	1.00	1.00	1.00
b	Error limit + or - .01 mg.	{ Price											
		{ each 2.50	1.75	1.50	1.25	1.00	.75	.60	.50	.50	.50	.50	.50
c	Ordinary commercial	{ Price											
		{ each 1.50	1.00	.85	.75	.60	.40	.30	.25	.25	.25	.25	.25
346	Gramme Weights, imported; well adjusted. A good quality, which stands between the analytical and cheaper grades, in polished wooden block, to 1 milligramme.	Set of	20	50	100	200	500	1000	grammes				
		Price	\$1.75	2.00	2.50	3.50	5.00	7.50					



347

347	Gramme Weights.	Same as No. 346, but in polished case, with hinged cover.	Set of	20	50	100	200	500	1000	grammes
			Price	\$3.00	3.50	4.50	6.00	7.50	10.00	



348 No. 12



351

No.

348 **Gramme and Grain Weights, Becker's No. 2.** In mahogany box lined with black velvet; each piece fitted separately; brass weights lacquered, fractions of the gramme platinum.

No. 11	50 grammes down to 1 milligramme.....	\$ 9.00
No. 13	100 " " 1 "	10.00
No. 18	1000 grains down to 1-100 grain.....	10.00
No. 12	100 grammes down to 1 centigramme.....	5.50
No. 15	500 " " 1 "	9.50
No. 17	1000 " " 1 "	12.00

349 **Gramme Weights, Becker's No. 2.** In mahogany block.

No. 14	500 grammes down to 1 gramme	6.00
No. 16	1000 " " 1 "	8.50

350 **Gramme Weights, brass.** In block.

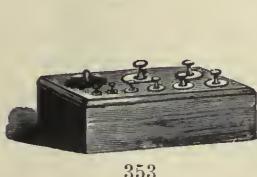
20	grammes down to 1 centigramme.....	.60
50	" " 1 "	1.00
100	" " 1 "	1.50
500	" " 1 gramme	2.50
1000	" " 1 "	4.00
2000	" " 1 "	6.00

351 **Metric Weights of Japanned Iron.** Loose.

1	kilogramme down to 10 gramme.....	1.25
2	" " 10 "	2.00
5	" " 10 "	3.50
10	" " 10 "	7.00

352 **Troy Weights, Brass, Becker's.** In mahogany box, lined with velvet. All small weights are of aluminum, fitted separately.

One	1 oz. piece down to $\frac{1}{4}$ grain.....	3.50
Two	2 " " $\frac{1}{4}$ "	6.25
One	5 " " $\frac{1}{4}$ "	7.75
One	10 " " $\frac{1}{4}$ "	10.00
One	20 " " $\frac{1}{2}$ "	15.00
One	50 " " $\frac{1}{2}$ "	20.00
Two	100 " " 1 "	30.00
One	200 " " 1 "	40.00



353



355



358

No.

353 Troy Block Weights of solid brass. In cherry block.

1 oz. down to $\frac{1}{2}$ grain.....	\$1.00
Two 2 " " $\frac{1}{2}$ "	1.75
5 " " $\frac{1}{2}$ "	2.50
10 " " $\frac{1}{2}$ "	4.00

354 Troy Block Weights of brass, highly finished. In ash block.

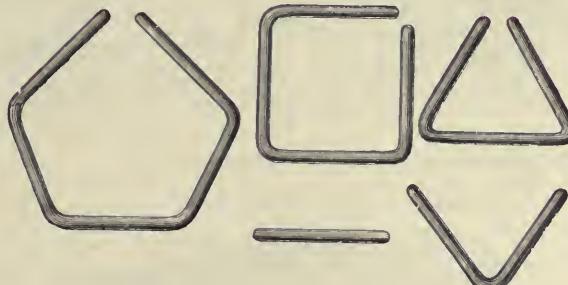
20 oz. down to $\frac{1}{2}$ grain.....	7.00
30 " " $\frac{1}{2}$ "	9.00
50 " " $\frac{1}{2}$ "	12.50

355 Troy Cup Weights, Troemner's.

4 oz. down to $\frac{1}{4}$ oz.....	1.50
8 " " $\frac{1}{4}$ "	3.00
16 " " $\frac{1}{4}$ "	4.00
32 " " $\frac{1}{4}$ "	5.50
64 " " $\frac{1}{4}$ "	9.00

356 Aluminum Gramme Weights.

1 gramme down to 1 centigramme.....	Set .40
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357 and 360

357 Troy Aluminum Grain Weights.

5 grains down to $\frac{1}{2}$ grain.....	Set \$0.25
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358 Troy Aluminum Grain Weights. Square, made concave, so they can be picked up readily.

10 grains down to $\frac{1}{2}$ grain.....	Set .40
--	---------

359 Decimal Troy Weights, brass, Troemner's.

Set of 4-10, 3-10, 2-10, 1-10, 5-100, 4-100, 3-100, 2-100, 1-100 oz.....	2.50
--	------

360 Decimal Troy Grain Weights.

50 grains down to 10 grains, nickel silver.....	Set .60
---	---------



361



362



363-364

No. 361 Avoirdupois Weights, brass. In walnut block.

1 lb., down to	$\frac{1}{8}$ oz.	\$2.50
2 " "	$\frac{1}{8}$ "	3.75
4 " "	$\frac{1}{8}$ "	7.00

No. 362 Avoirdupois Weights, brass. Standard quality; in oiled walnut block, lined with poplar to prevent shrinkage; weights of the finest finish; burnished.

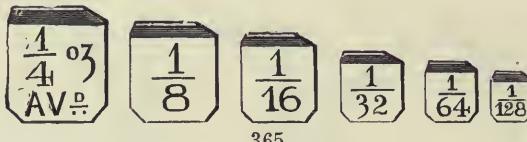
1 lb., down to	$\frac{1}{4}$ oz.	4.00
2 " "	$\frac{1}{4}$ "	5.50
4 " "	$\frac{1}{4}$ "	7.00

No. 363 Avoirdupois Brass Cased Weights.

1 lb., down to	$\frac{1}{2}$ oz.	1.25
2 " "	$\frac{1}{2}$ "	1.75
4 " "	$\frac{1}{2}$ "	3.00

No. 364 Avoirdupois Iron Weights. Japanned, loose.

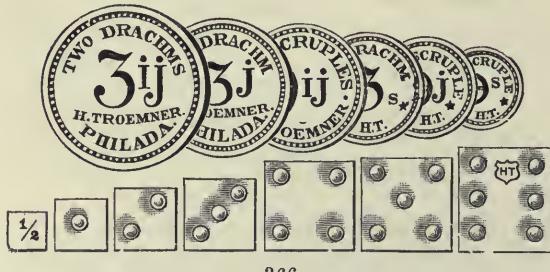
1 lb., down to	$\frac{1}{2}$ oz.	.75
2 " "	$\frac{1}{2}$ "	1.00
4 " "	$\frac{1}{2}$ "	1.50
8 " "	$\frac{1}{2}$ " (15 lbs.)	3.00
10 " "	$\frac{1}{2}$ " (25 lbs.)	4.00



365

No. 365 Avoirdupois Fractions of Ounces, of nickel silver.

1/4 oz., down to 1-128 avoirdupois oz.	Set	\$0.75
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366

No. 366 Prescription Weights, of nickel silver and brass.

2 drachms, down to $\frac{1}{2}$ grain	Set	\$0.25
6 grains " $\frac{1}{2}$ "	Set	.10

6 grains " $\frac{1}{2}$ "	Set	.10
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Gold Weights. 10 pennyweights, down to $\frac{1}{2}$ grain	Set	.50
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Sugar Weights. 13.024, 26.048 or 52.096 grammes	Each	1.00
---	------	------

Sugar Weights. Set of 2, in lined box, normal and $\frac{1}{2}$ normal	2.25
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Sugar Weights. Set of 3, in lined box, $\frac{1}{2}$ normal, normal and double normal	4.50
---	------

BAROMETERS

Barometers will be shipped only at purchaser's risk.



371

373

No.	Barometers, Metal case weather aneroid. 5 inches diameter, with closed porcelain dial.....	\$ 7.00
371	Barometers, Metal case weather aneroid. 5 inches diameter, with closed porcelain dial.....	\$ 7.00
372.	Same as above, with curved thermometer..... For altitudes of 6,400 feet.....	8.00 Extra 1.00
373	Barometers, Metal case weather aneroid. 5 inches diameter, with open dial, visible works.....	9.25
374	Same as above, with curved thermometer..... For altitudes of 6,400 feet.....	10.25 Extra 1.00
378	Barometer, Aneroid, first quality, watch form, 1 3/4 inches diameter, with silvered metal dial, compensated for temperature, in Morocco case. Revolving altitude scale, 8,000 feet..... Revolving altitude scale, 10,000 feet..... Revolving altitude scale, 16,000 feet.....	20.00 21.00 23.00
380	Barometers, Aneroid, same as No. 378, but with raised ring for divisions and curved thermometer. Revolving altitude scale, 8,000 feet..... Revolving altitude scale, 10,000 feet..... Revolving altitude scale, 16,000 feet.....	22.50 23.50 26.00

No.

381 Barometer, Mercurial, improved, Fortin principle. This instrument closely resembles the U. S. Weather Bureau Standard Barometer in design and method of operating. The zero level and readings are obtained in exactly the same way. The scale graduations and vernier are mechanically equal to any, and read accurately to 1-10 mm. and 1-200 in. Price, with lens thermometer, attached to board..... \$20.00



381

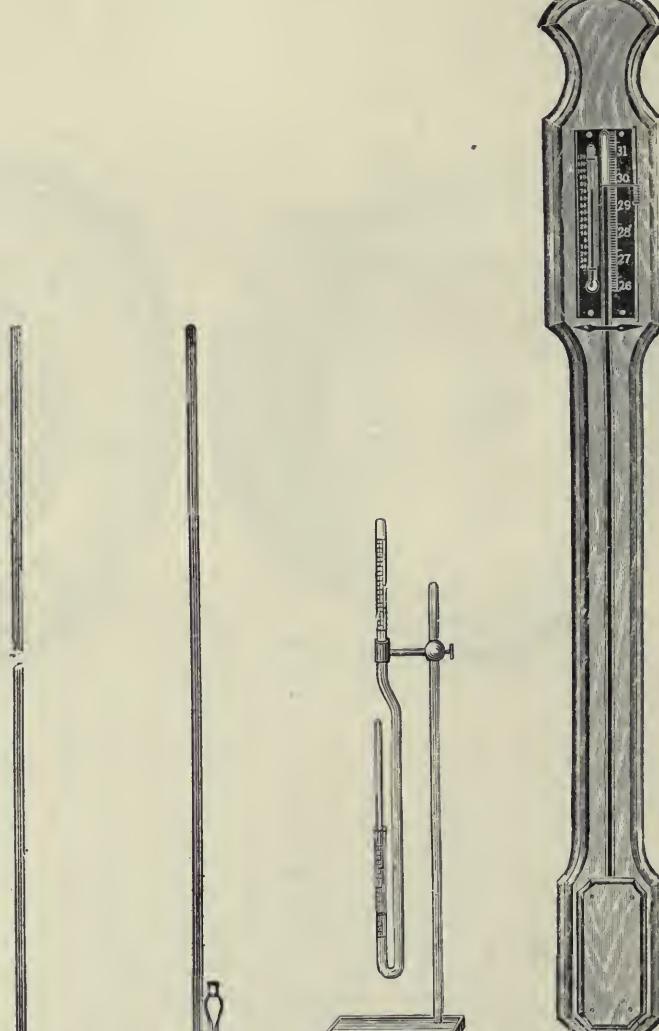
385

386

387

382

382 Barometer, Mercurial, on oak frame, with thermometer attached..... \$10.00
 384 Barometer, U. S. Signal Standard. Double scale, graduated in inches and millimeters 40.00
 385 Barometer Tubes, plain straight, one end sealed, 35 inches long..... .35
 386 Barometer Tubes, bent, with bulb, one end sealed, 35 inches long..... .40
 387 Barometer Tubes, graduated, for Bunsen's syphon barometer..... 3.00





**PURE
BONE ASH**
Made by
**THE DENVER FIRE
CLAY COMPANY**

Many years ago we learned that if we were to sell a satisfactory bone ash we would have to manufacture it ourselves. A bone ash suitable at all times for the delicate work required in assaying was not then, and is not now, obtainable in the market, other than our brand. We began manufacturing on a small scale in 1876; now our plant is the largest and most completely equipped in the world for making this specialty. Our capacity per week is 125 barrels. We sell more bone ash for use in assaying than all other dealers or manufacturers combined. The reason is that it is made especially for the purpose intended, not for case hardening, or other purposes requiring an inferior variety, but from the cleanest of bones, absolutely free from adulteration, which have passed the critical eye of an expert sorter, where all unsuitable material is rejected.

We guarantee our bone ash to be the highest and most uniform grade manufactured. Its tremendous sale is a source of much satisfaction to us, as we have spared no expense in familiarizing ourselves with every quality it should have to give uniform and continuous satisfaction.

Our bone ash is made in three grades, single X, double X, and triple X, put up in 25-lb., 50-lb. and 100-lb. boxes and 500-lb. barrels, all securely lined to prevent loss from leakage, to meet requirements in different localities. All three grades contain exactly the same quality of bones, but are distinguished from each other by a difference in fineness of particles, the single X being the coarser, double X somewhat finer, and the triple X grade finer still.

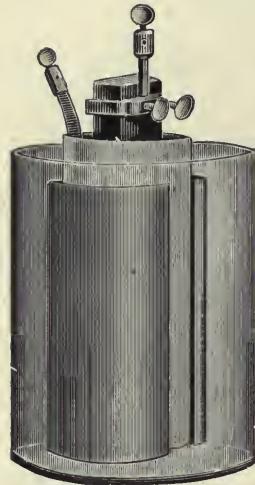
We do not specify our bone ash as being of some particular mesh, as after years of experience in its manufacture we have found that any bone ash running of an even mesh will not make a satisfactory cupel; the varying degrees of fineness must be present in their natural proportions from the comparatively coarse to the extremely fine. When the cupel is made from this stock the interstitial spaces are practically filled, the occlusion of air and moisture minimized (otherwise than by absorption), the cupel will be homogeneous, and will fill its office without cracking. Practically 75 per cent. of our X grade will pass a screen aperture of .0147 inch (Approx. 40 mesh), the XX .0091 inch (Approx. 60 mesh), and the XXX .0065 inch (Approx. 80 mesh). After most exhaustive experiments we have found these sizes best fitted to cover the general requirements of a perfect cupel.

If it is the desire of any of our customers to be supplied with bone ash all of which has passed some particular screen size, we are prepared to fill such orders with speed and accuracy, but will be compelled to make a small additional charge, depending on the screen and size of the order, to cover the additional cost of its production, and we would ask that we be supplied with the size of screen aperture, as the word "mesh" is more or less meaningless unless other specifications as to size of wire are given.

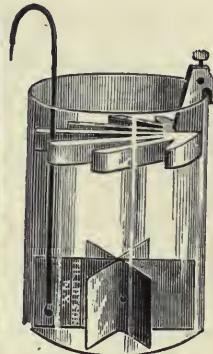
Why not specify Denver Fire Clay bone ash and not take any chances. It may be a trifle more expensive, but it invariably pays to get the best. Inside of every package we send out is a brown tag showing its lot number and date of manufacture, so that we are kept in the closest touch with the trade and are able to detect the slightest fault at once.

We ask our customers to preserve these tags, and any opinions expressed as to its quality will be deemed a particular favor, whether in criticism or praise. We know this is the very best way to maintain an article in a high state of perfection.

BATTERIES



401



402



402a



403

No.

401 Battery, Bunsen's. With rolled zincs.

	Size Jars	1 qt. 4x5 in.	2 qts. 5x6 in.	1 gal. 6x8 in.
Cell, complete		\$1.20	\$1.50	\$3.00
Parts: Carbon		.10	.20	.40
Carbon connection		.20	.30	.60
Carbon clamp		.10	.15	.40
Glass jar		.25	.30	.40
Porous cup		.15	.20	.30
Zinc and connection		.60	.70	1.00

402 Battery, Crowfoot, Gravity.

Cell, complete.....	\$1.00
Parts: Copper, 6-inch.....	.15
Zinc, with hanger and connector.....	.50
Jar, 6 x 8 inches .....	.50

402a Battery, Daniell's.

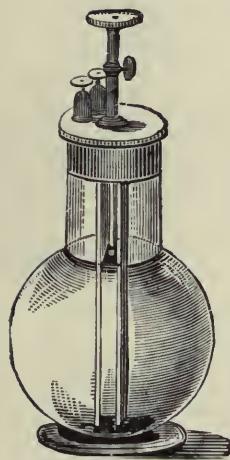
Cell, complete.....	2.00
Parts: Copper, with pocket.....	.80
Porous Cup .....	.40
Glass jar, 6x8 inches.....	.50
Zinc .....	.50
Zinc clamp.....	.20

403 Battery, Leclanche, "Gonda" Cell.

Cell, complete.....	1.25
Gondas only.....	.50
Zincs only.....	.10

403a Battery, Leclanche, "Porous Cup" Cell.

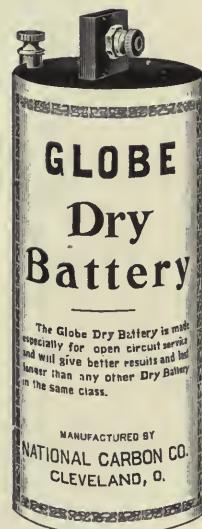
Cell, complete.....	1.00
Porous cup only.....	.50
Zincs only.....	.10



404



405



405a

No.

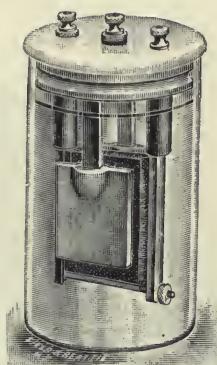
404 **Battery, Grenet.** French form.

Capacity	$\frac{1}{2}$ pt.	1 pt.	1 qt.	$\frac{1}{2}$ gal.	$\frac{1}{2}$ gal. double.
Cell, complete	\$1.20	\$1.80	\$2.50	\$4.00	\$6.00
Parts: Carbons, each	.20	.30	.40	.50	.50
Zinc	.15	.20	.25	.30	.30

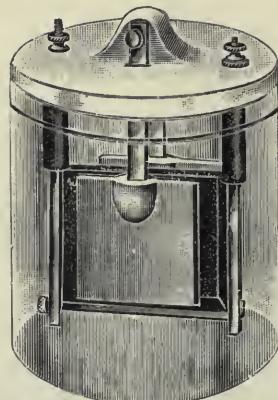
405 **Battery, Samson No. 2.**

Cell, complete.....	\$1.50
Parts: Carbon vase.....	1.00
Zinc, cylindrical.....	.25
Glass jar.....	.25
Rubber cover.....	.15
Cork stoppers for re-plugging carbon.....	.05

405a Battery, "Globe" Dry Cell. Very efficient.....	.30
405b Battery, "Columbia" Dry Cell No. 6. Size $2\frac{5}{8} \times 7$ inches, of superior quality..	.40
405c Battery, "Ever Ready" Dry Cell. Size $2\frac{3}{4} \times 6\frac{1}{2}$ inches, the best made.....	.50



406a



406b

No.
406

Batteries, Edison Primary. The most economical and convenient battery on the market. Its advantages are:

- 1st. High and constant available electromotive force.
- 2nd. No local action, and therefore no loss of energy while the cell is idle—the chemical action in cell is less than 1 per cent. per month.
- 3rd. Extremely low internal resistance.
- 4th. Heavy current delivery, absolutely constant.
- 5th. Cheap materials easily obtained.
- 6th. No attention or inspection required until all the energy of its elements is exhausted.
- 7th. Convenience of form and freedom from noxious fumes or chemical deposits. No creeping.
- 8th. No polarization.
- 9th. Will not freeze at lowest temperature.
- 10th. The **Edison Primary Battery** is made in several different types, each one of which is specially designed for the kind of work named.

(a) **Type B. B. Cell**, Small Gas Engine Model. Capacity 100 ampere hours. Complete cell, with porcelain jar Net \$1.50

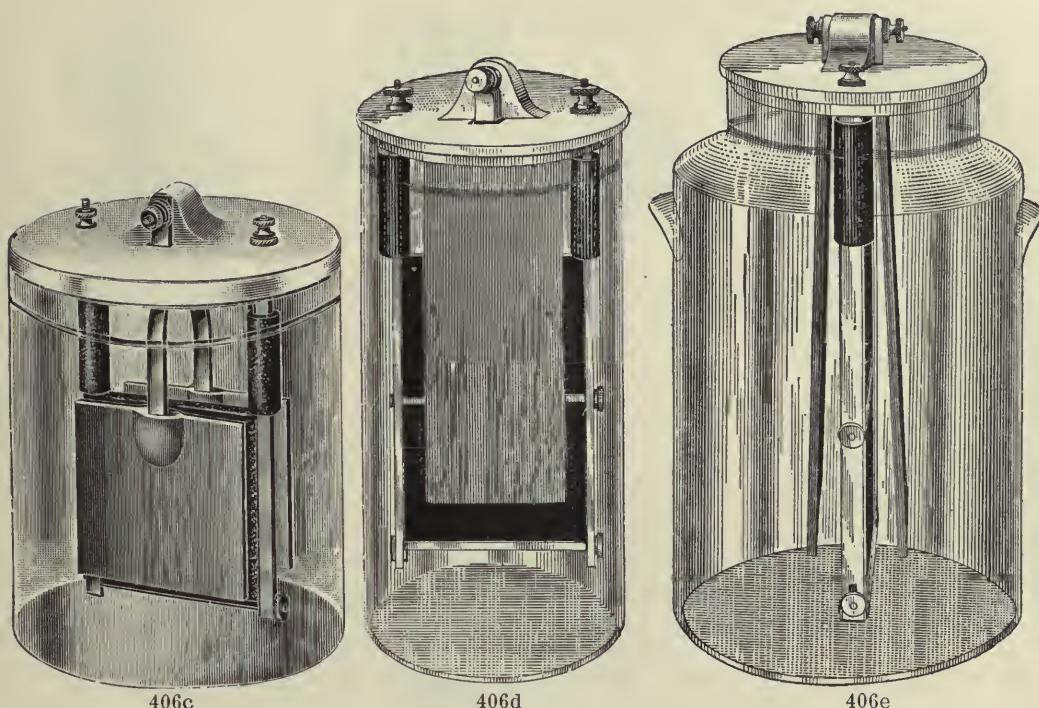
Price of renewal parts:

1 Copper Oxide Plate (capacity 1 charge)	.....	.24
1 Zinc Plate (capacity 1 charge)	.....	.28
Can containing 1 charge Caustic Soda	.....	.15
Bottle Special Battery Oil (1 charge)	.....	.05

(b) **Type Q Cell**, Small Fan Motor Model. Capacity 150 ampere hours. Complete Cell, with porcelain jar Net 2.20

Price of renewal parts:

2 Zinc Plates (capacity 1 charge) 14c each	.....	.28
1 Copper Oxide Plate (capacity 1 charge)	.....	.31
Can containing 1 charge Caustic Soda	.....	.17
Bottle Special Battery Oil (1 charge)	.....	.06



(c)	Type R. R. Cell, Large Gas Engine and Railroad Crossing Model. Capacity 300 ampere hours. Complete cell, with porcelain jar.....	Net \$2.90
-----	--	------------

Price of renewal parts:

2 Zinc Plates (capacity 1 charge) 25c each .....	.50
1 Copper Oxide Plate (capacity 1 charge) .....	.55
Can containing one charge of Caustic Soda .....	.28
Bottle Special Battery Oil (1 charge) .....	.07

(d)	Type S Cell, Phonograph Model. Capacity 300 ampere hours. Complete cell, with porcelain jar	Net 3.00
-----	---	----------

Price of renewal parts:

2 Zinc Plates (capacity 1 charge) 25c each .....	.50
2 Copper Oxide Plates (capacity 1 charge) 31c each .....	.62
Can containing 1 charge of Caustic Soda .....	.28
Bottle Special Battery Oil (1 charge) .....	.06

(e)	Type W Cell, Large Motor and Cautery Model. Capacity 600 ampere hours. Complete cell, with porcelain jar.....	Net 4.85
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Price of renewal parts:

2 Zinc Plates (capacity 1 charge) 41c each82
2 Copper Oxide Plates (capacity 1 charge) 55c each	1.10
Can containing 1 charge Caustic Soda .....	.52
Bottle Special Battery Oil (1 charge) .....	.08



407

408

409

409

409a

No.

407 **Battery Jars.** Round, of glass, best make.

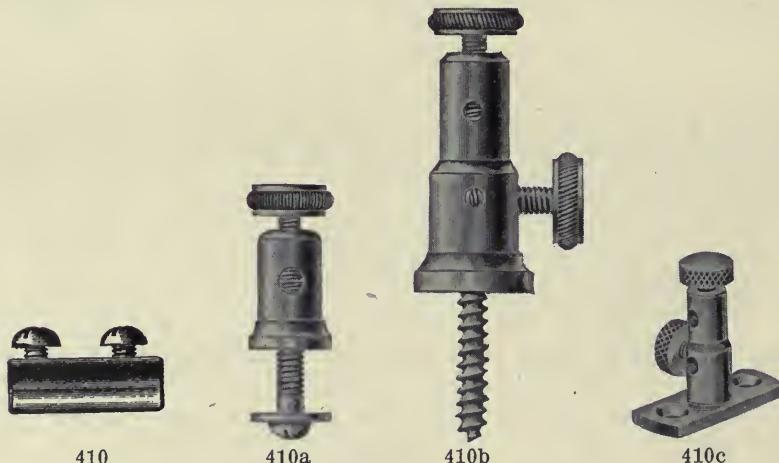
Width	4	4½	5	5	6	6	8½	9 in.
Height	4	5	6	7	6	8	12	15 in.
Each	\$0.20	.25	.30	.40	.40	.50	1.25	.75

408 **Battery Cells.** Porous, round cups.

Width	2	2½	2½	3	3	3	3 in.
Height	3	4½	5¼	5½	7	8	8 in.
Each	\$0.15	.18	.20	.22	.25	.30	

409 **Battery Connections, Binding Screws.** Finished.

Size.....	Single	Double
Each.....	\$0.10	.15

409a **Battery Connectors,** brass, double..... \$0.20

410

410a

410b

410c

410 **Battery Double Connector.** For two wires.

Size	Small	Large
Each	\$0.05	.10

410a **Battery Binding Post.** American pattern.

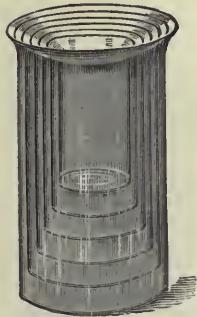
Size	Small	Medium	Large
Each	\$0.05	.08	.10

410b **Battery Binding Post,** with wood screw.

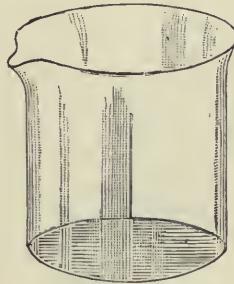
Size	Single	Double
Each.....	\$0.15	.20

410c **Battery Binding Post,** double, with plate to screw to table..... Each \$0.35

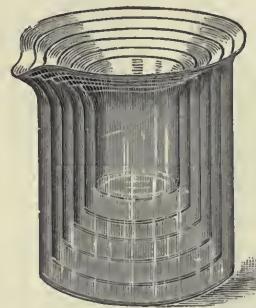
BEAKERS



412



413



414

Note:—Our beakers are equally thin at the bottom and sides, and thoroughly annealed. They are made according to the formula of the late Prof. Weber, of Charlottenburg. This glass is of high resistance to the action of water and chemicals, and has proven of equal practical use as Jena glass.

We offer to our customers this glass of very superior quality at the following prices, which will be found to be no higher than the price of the ordinary Bohemian glass.

No.

411 Beakers, Bohemian Style, plain form. "Resistance Glass."

Single:	No.	000	00	0	1	2	3	4
	Capacity	½	1	1¾	3½	5	8	12 oz.
Each		\$0.05	.07	.08	.10	.12	.17	.22
No.		5	6	7	8	9	10	
Capacity		18	24	34	50	70	80 oz.	
Each		\$0.25	.30	.35	.40	.55	.65	

412 Beakers, Bohemian Style, plain form; in nests. "Resistance Glass."

Nests:	No. 000 to 0 in nests of 3, capacity ½ to 2 oz.	Nest	\$0.20
0 "	2 " 3, " 2 " 5 oz.	"	.30
1 "	3 " 3, " 3 " 8 oz.	"	.35
1 "	4 " 4, " 3 " 12 oz.	"	.55
1 "	5 " 5, " 3 " 18 oz.	"	.70
1 "	6 " 6, " 3 " 24 oz.	"	1.00
1 "	7 " 7, " 3 " 34 oz.	"	1.35
1 "	8 " 8, " 3 " 50 oz.	"	1.60
1 "	9 " 9, " 3 " 70 oz.	"	2.10
1 "	10 " 10, " 3 " 80 oz.	"	2.75

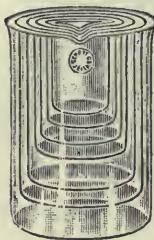
412a Beakers, plain form, for electrolytic copper determination, 110 mm. high, 47 mm. at bottom, 65 mm. at top, each \$0.20 Dozen 2.00

412b Beakers, usual high form, like 411 and 412, but with lip.

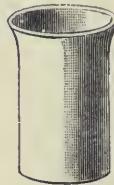
No.	000	00	0	1	2	3	4	5	6	7
Each	\$0.05	.07	.08	.10	.12	.17	.22	.25	.30	.35

413 Beakers, Bohemian Style, Griffin's, lipped form. "Resistance Glass."

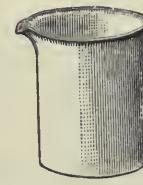
No.	000	00	0	1	2	3	4	5
Capacity	½	1½	2½	5	8	13	20	28 oz.
Each	\$0.07	.09	.10	.12	.18	.25	.30	.40
No.	6	7	8	9	10	11	12	
Capacity	36	48	62	80	96	112	144 oz.	
Each	\$0.50	.60	.70	.80	.90	1.00	1.20	



414b



415



415a



416-417

No.

414 Beakers, Bohemian Style, Griffin's; in nests. "Resistance Glass."

Nests:	No. 000 to 0, in nests of 3, capacity	$\frac{1}{2}$ to 3 oz.	\$0.25
	0 "	2 " 3, "	.35
	1 "	2 " 2, "	.30
	1 "	3 " 3, "	.50
	1 "	4 " 4, "	.80
	1 "	5 " 5, "	1.10
	1 "	6 " 6, "	1.50
	1 "	8 " 8, "	2.50
	1 "	10 " 10, "	3.50
	1 "	12 " 12, "	5.00

414b Beakers, Jena Glass, Griffin's form, lipped.

Capacity	100	150	250	400	600	800	1000 cc.
Each	\$0.15	.20	.25	.30	.35	.40	.50

415 Beakers, Royal Berlin porcelain, glazed, plain.

No.	1	2	3	4
Capacity	6	12	20	32 oz.
Each	\$0.50	.75	1.00	1.40

415a Beakers, Royal Berlin porcelain, glazed, lipped.

No.	1	2	3	4
Capacity	4	6	8	12 oz.
Each	\$0.40	.50	.60	.70

416 Beakers, Copper, Griffin's form, lipped.

Capacity	4	8	16	32 oz.
Each	\$0.55	.75	1.00	1.25 Plain.
Each	.70	.90	1.20	1.60 Nickel-plated.

417 Beakers, Aluminum, Griffin's form, lipped.

Capacity	4	8	16	32 oz.
Each	\$0.60	.80	1.20	1.60

BELL GLASSES



421



425



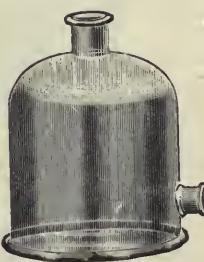
422



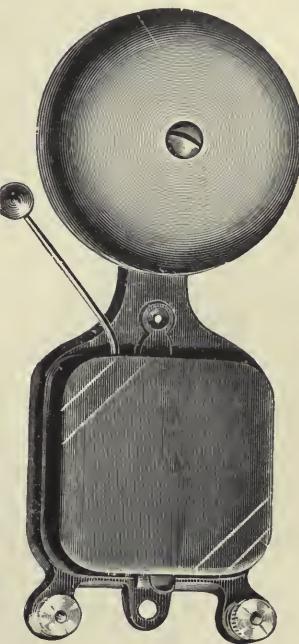
423



424



426



427

These Bell Glasses have a strong rim at the bottom, and are ground for use with the air pump.

424	Bell	Each	\$0.50	.70	.90	1.20	1.40	1.75	3.00
Glasses, open top, narrow neck for receiving brass cap or stopper.									
Height	6	8	9		11		15 in.		
Dia.	3	4	5		6		7 in.		
Capacity	pt.	qt.	$\frac{1}{2}$		1		$1\frac{1}{2}$	2	3 gal.

425 Bell Glasses, swelled form, with knob.
Capacity qt. $\frac{1}{2}$ 1 gal.

426 **Bell Glasses**, tubulated, with opening on top and tubulation on side near bottom, for use with filtering pump.
Height 3 in. Cost 16¢.

Height	8	10 in.
Dia.	6	8 in.
Each	\$1.50	2.50

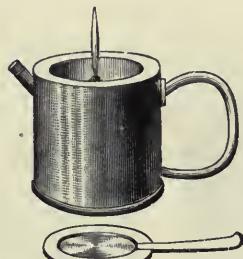
Size	2½	3	4 in.
Total	20.00	24.00	32.00

Push Buttons. walnut..... Each \$0.15

BLAST LAMPS



431



432



433

No.

431	Blast Lamp; with safety valve, of copper. For alcohol, giving a horizontal flame	\$3.00
432	Blast Lamp; of copper. For alcohol, giving a vertical flame. Small size..... Large size.....	2.00 3.00
433	Blast Lamp, Barthel's. For gasoline, on stand, revolves so as to give both vertical and horizontal flame, excluding any danger of explosion.....	8.00



434

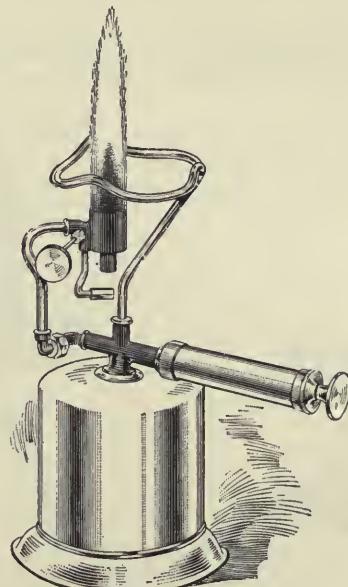


434a

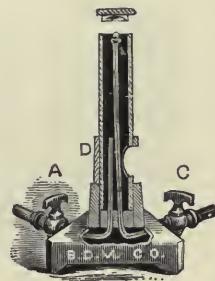
434	Blast Lamp, Bunsen's. For gas, most improved form, complete.....	\$3.50
434a	Blast Lamp, Bunsen's. For gas, extra large and powerful.....	7.50



435



435a



436

No.			
435	Blast Lamp, Wiesnegg's.	French form, for gas, mounted on ball joint.....	\$4.00
435a	Blast Lamp, Turner's Gasoline Laboratory Torch,	brass, nickel-plated, capacity one pint, with swiveled burner, can be lighted with a match.....	5.00
436	Blast Lamp, Fletcher's.	With upright blast.....	3.50
437	Blast Lamp Accessories,	used with Fletcher-Plattner blow pipe furnace for capsules or crucibles.	
437a	Blow pipe furnace, with bottom or side hole and 1 crucible.	.....	.25
437b	Clay crucibles, $\frac{3}{4}$ -in. dia.....	Doz.	.20
437c	Clay capsules	Doz.	.20
437d	Furnace support; to go on 436.....		.60



437d



438

438	Blast Lamp; Fletcher's Compound Blow Pipe,	for glass workers and experimental laboratories, very powerful.....	Each \$7.50
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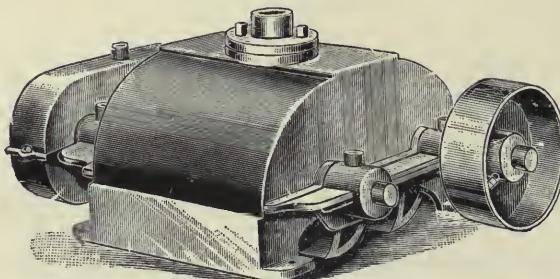
BLOWERS---BELLows



441



442



445

No.

441 Blowers; Fletcher's Foot Bellows. Giving a continuous blast of air.

No.	1, small	2, medium	3, large
Dia.	7 3/4	10	11 in.
Each	\$4.00	5.00	7.00

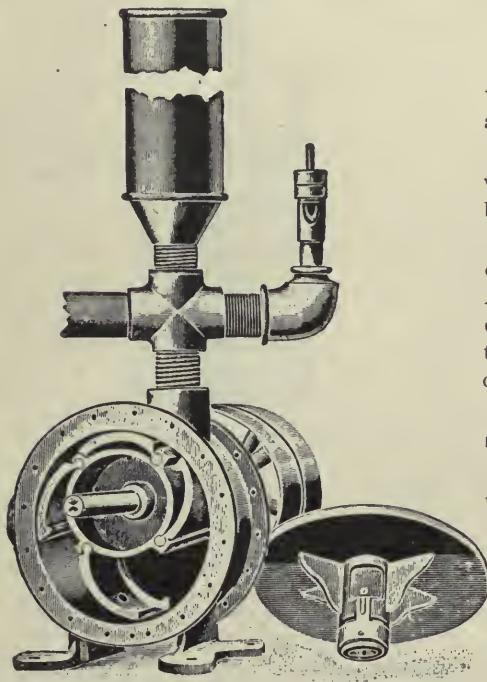
442 Blowers; Foot Bellows, mounted on legs.

No.	4, small	5, medium	6, large
Dia.	7 3/4	10	11 in.
Each	\$5.00	6.00	8.00

Note:—The Nos. 1 and 4 Bellows have a single disk; the Nos. 2 and 5 two, and the Nos. 3 and 6 three disks.

443	Blowers; Extra Rubber Disk for Nos. 1 or 4, 9 inches.....	Each	\$0.60
	" " " " 2 or 5, 12 inches.....	Each	.90
	" " " " 3 or 6, 15 inches.....	Each	1.35
444	Blowers; Extra Nets for above.....		.40
445	Blowers; Root's Positive Pressure, 1/4 B. S.....	Net	20.00

Patented High Pressure Blower



446

The following are a few of the purposes for which these blowers are now in use.

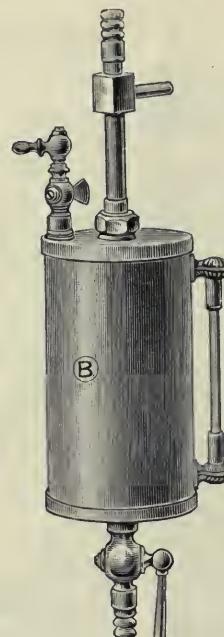
**Melting of Metals,
Hardening,
Annealing,
Sand Blasting,
Fuel Oil Plants,
Glass Blowing and Bending,
Tempering,
Forging,
Brazing,**

**Removing Paint,
Atomizing,
Heating, Ventilating,
Soldering,
Cleaning,
Agitating Liquids,
Pneumatic Service,
Testing Gas Fixtures,
Burning Brands.**

Size of Blower.	Cubic Inches Delivered per Revolution.	Maximum Speed Revolutions per Minute.	Diameter of Pulleys.	Face of Pulleys.	Horse Power Required —Approximate.	Lbs. Maximum Pressure to Sq. Inch.	Size of Inlet and Outlet.	Weight.	Floor Space Inches.	PRICE.
A	17	600	4	1	1-10	10	1 $\frac{1}{2}$ "	20	10x 6	\$ 23.00
B	30	600	4	1 $\frac{1}{4}$		10	1 $\frac{1}{2}$ "	26	12x 8	30.00
C	80	400	5	2 $\frac{1}{2}$		10	1 $\frac{1}{2}$ "	43	15x10	45.00
D	200	300	7	2 $\frac{1}{2}$		10	1 $\frac{1}{2}$ "	76	19x15	55.00
E	400	250	12	3	1	10	1 $\frac{1}{2}$ "	153	24x18	65.00
F	675	200	12	3	1 $\frac{1}{2}$	10	2 "	250	28x22	90.00
G	1400	200	14	3	2 $\frac{1}{2}$	10	2 $\frac{1}{2}$ "	400	31x24	150.00



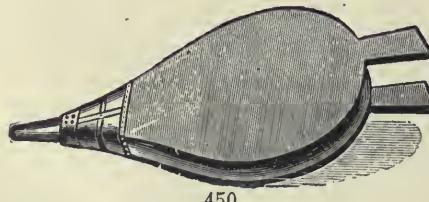
448



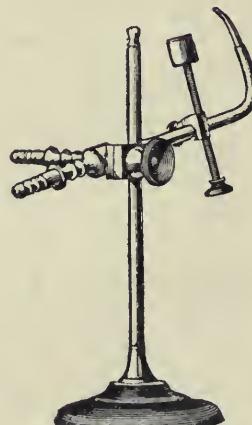
449

No.

447	Blowers; Richard's Waterblast. Direct connection is made with Richard's filter pump, producing simultaneously vacuum and blast. Without filter pump	\$ 7.50
448	Blowers; Richard's. Complete with filter pump	9.00
449	Blowers; Muencke's Waterblast and Exhauster. Nickelled brass, with air outlet and water regulating stopcock.....	10.00
	With Vacuum Gauge, \$5.00 extra.	



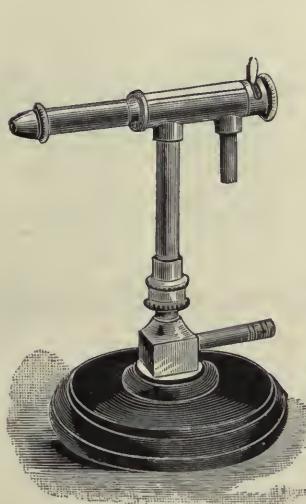
450



450a

450	Blowers; Hand Bellows, 10-in. diameter, good grade.....	\$1.50
450a	Blowpipe, Oxy-hydrogen, with adjustable holder for lime cylinder; of brass, like sketch, but with 2 stopcocks.....	7.50

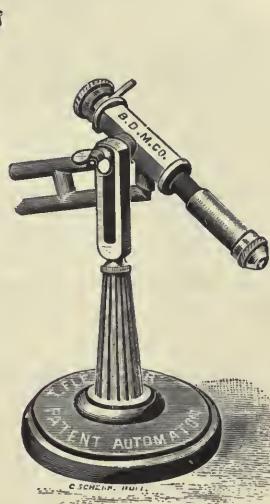
BLOW PIPES



451



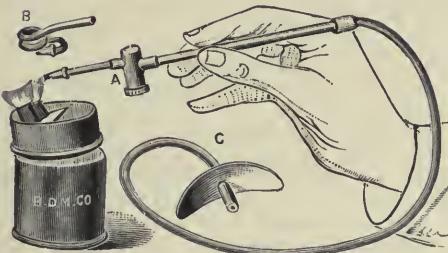
452-3



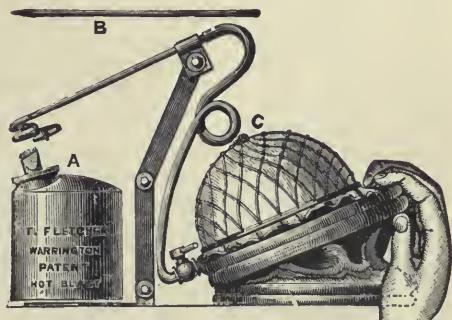
454-5

No.			
451	Blow Pipe; Fletcher's Automaton No. 6A. On stand.....		\$4.00
452	Blow Pipe; Fletcher's Automaton Hand No. 6B. For $\frac{3}{8}$ -in. gas pipe.....		3.50
453	Blow Pipe; Fletcher's Automaton Hand No. 6C. For $\frac{1}{2}$ -in. gas pipe.....		5.00
454	Blow Pipe; Fletcher's No. 6D. Automaton 6B on stand.....		4.00
455	Blow Pipe; Fletcher's No. 6E. Automaton 6C on stand.....		5.50

Note: No. 6B and 6C Automaton Hand Blow Pipe will be found a most convenient pattern for small work, brazing, annealing, etc. The No. 6B requires a $\frac{3}{8}$ -bore gas pipe and tap. The No. 6C requires for its fullest power a $\frac{1}{2}$ -in. clear bore gas pipe and tap. The No. 6B requires Blower No. 9A; No. 6C requires Blower No. 9B.

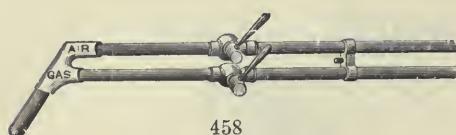


456

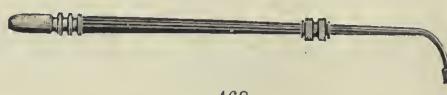


457

No.			
456	Blow Pipe; Fletcher's New Patent No. 42. With both cold blast and patent hot blast, two jets, nickel-plated mouth-piece.....		\$1.50
457	Blow Pipe, Fletcher's No. 32A. As illustrated, complete		5.00



458



468a



459



469



460



461



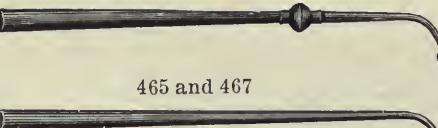
469a



462



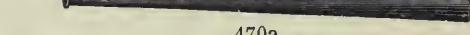
464



465 and 467



466 and 468



470a

No.			
458	Blow Pipe; for brazing work. With stopcocks.....	\$2.00	
459	Blow Pipe; Fletcher's No. 30. Taper shaft, brass.....	.65	
460	Blow Pipe; Fletcher's No. 30A. Straight shaft, brass.....	.55	
461	Blow Pipe; Fletcher's No. 30B. Straight shaft with mouth-piece.....	.75	
462	Blow Pipe; Fletcher's No. 30C. Jointed with both hot and cold blast jets..	1.00	
464	Blow Pipe; Fletcher's Hot Blast Chemical No. 31. With mouth-piece....	1.25	
465	Blow Pipe; Jeweler's Form. Brass, with air chamber.....	.20	
466	Blow Pipe; Jeweler's Form. Brass, without air chamber.....	.15	
467	Blow Pipe; Jeweler's Form. Nickel-plated, with air chamber.....	.25	
468	Blow Pipe; Jeweler's Form. Nickel-plated, without air chamber.....	.20	
468a	Blow Pipe; School of Mines Pattern. With moisture trap, made of brass, with bone mouth-piece.....	.50	
469	Blow Pipe; Plattner's. Nickel-plated, with mouth-piece and platinum tip..	3.00	
469a	Blow Pipe; Plattner's. Nickel-plated, with hard rubber mouth-piece and blast attachment for gas.....	2.50	
470	Blow Pipe; Berzelius'. Brass, with mouth-piece and platinum plate.....	1.50	
470a	Blow Pipe; Black's Conical Form. With movable brass tip.....	.20	
471	Blow Pipe; Jet Tips. Brass for all Fletcher's mouth blow pipes	Each .10	
472	Blow Pipe Tips. Pure platinum, for Plattner's blow pipes	" 1.25	
472a	Blow Pipe Tips. Brass for Black's blow pipes	" .05	
473	Blow Pipe Mouth Pieces. Hard rubber, trumpet shaped, large	" .35	
474	Blow Pipe Mouth Pieces. Horn, small.....	" .25	
	Blow Pipe Goods, Chemicals and Reagents, according to Prof. Plattner's.		

For a full line of these, refer to Index, under aforesaid names.

BOTTLES

For General Use, for Specific Use and for Reagents



501



502



504



505



506



507



508

No. 501 Bottles; narrow mouth. Flint glass; s. c. "Prescriptions."

Capacity	1	2	4	8	12	16	32 oz.
Doz.	\$0.25	.30	.40	.60	.75	.90	1.40
Capacity	½	1	2	5 gal.			
Each	\$0.25	.35	.80		1.50		

502 Bottles; wide mouth. Flint glass; s. c. "Powder Bottles."

Capacity	½	1	2	4	8	12	16	32 oz.
Doz.	\$0.25	.30	.35	.40	.60	.80	1.00	1.50

503 Bottles; wide mouth. Green glass. For ore samples, etc.

Capacity	4 oz.	½ gal.	1 gal.	2 gal.
Gross	\$4.00	Each \$0.25	.40	.90

504 Bottles; extra wide mouth. Flint glass.

Capacity	1	2	4 oz.
Doz.	\$0.35	.40	.50

505 Bottles; extra tall. For oil samples and other liquids.

Capacity	2	4	8 oz.
Doz.	\$0.50	.90	1.20

505a Bottles; oil sample, long, with nickel-plated screw cap, cork lined, 4 oz., Doz. \$1.50

506 Bottles; homeopathic vials, with patent lip.

Capacity	½	1	2	3	4	6	8 drms.
Gross	\$0.80	.90	1.00	1.20	2.00	3.00	4.00

507 Bottles; with nickel screw caps. Round.

Capacity	1	2	4	8 drms.
Doz.	\$0.25	.30	.40	.50
Gross	2.00	2.50	3.50	5.00

508 Bottles; glass stoppered; s. c. "Specimen Bottles."

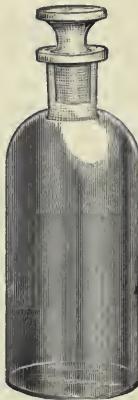
Capacity	1	2	5	10 grammes
Doz.	\$0.50	.60	.70	.80



509



510



511



512

NO. 509	Bottles; glass stoppered. Flint glass, narrow mouth; s. c. "Tinctures."									
		Capacity	1	2	4	6	8	12	16	32 oz.
	Doz.	\$1.00	1.20	1.40	1.60	1.80	2.00	2.50	3.50	
509a Bottles; glass stoppered. "Tinctures," same as No. 509, but of amber glass.										
509a	Capacity	1	2	4	8	16	32 oz.			
		\$1.20	1.40	1.60	2.00	3.00	4.00			
510 Bottles; glass stoppered. Green glass; s. c. "Acid Bottles."										
510	Capacity	12 oz.		1 pt.		1 qt.	½ gal.	1 gal.	2 gal.	
		Each	\$0.15	.20	.25		.35	.50	1.00	
511 Bottles; mushroom stopper, narrow mouth; s. c. "Tinctures."										
511	Capacity	1	2	4	8	16	32 oz.	½	1	
		Doz.	\$1.00	1.25	1.50	2.00	2.50	3.00	5.00	
511a Bottles, same as No. 511, but of amber glass, for solutions.										
511a	Capacity	½	1	2 gal.						
		Each	\$0.60	.75	1.50					
512 Bottles; mushroom stopper, wide mouth; s. c. "Salt Mouths."										
512	Capacity	1	2	4	6	8	12	16	32 oz. ½ gal.	
		Doz.	\$1.10	1.30	1.50	1.70	2.00	2.25	2.75	3.50



513



514



515

513	Bottles; Aspirator. With narrow outlet near bottom for rubber tubing.								
		Capacity	4 oz.	8 oz.	pt.	qt.			
	Each	\$0.35	.40	.50	.70				
514 Bottles; Aspirator. With wide outlet near bottom.									
514	Capacity	qt.	½	1	2 gal.				
		Each	\$0.70	.90	1.50	2.50			
515 Bottles; Aspirator. With glass stopper and glass stopcock ground into tubulation.									
515	Capacity	pt.	qt.	½	1	2	4	8 gal.	
		Each	\$1.80	2.00	2.50	3.50	6.00	10.00	20.00



516



517



518



519



520



520a

No.					
516	Bottles, Balsam.	With glass cap and loose fitting stopper, capacity 1 oz.			\$0.30
517	Bottles, Cobalt.	With ground in rod stopper, capacity 1 oz.			.25
518	Bottles, Cobalt.	With ground on glass cap, and long stopper. Capacity	1	2	4 oz.
		Each	\$0.35	.40	.50
519	Bottles, Coin or Acid Test.				
		Capacity	1	2 oz.	
		Each	\$0.30	.40	
520	Bottles, Compressing, Lintner's.	For conversions and digestions, cap'y 4 oz.			.50
520a	Bottles.	Same as No. 520, but with frame			2.00



521



521a



522



523

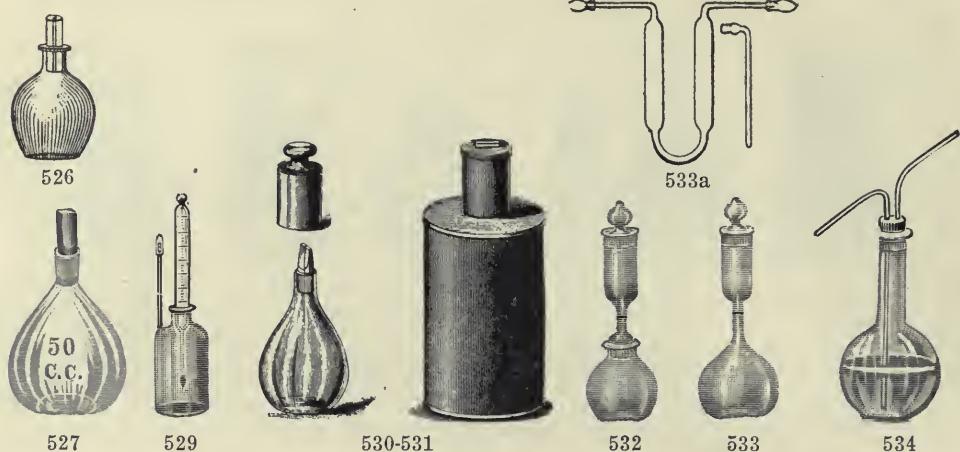


524



525

521	Bottles, Dropping.	With pipette stopper and rubber bulb, capacity 1 oz...	\$0.20
		capacity 2 oz...	.30
521a	Bottles, Dropping, Ranvier's.	With pipette stopper and ball top.	
522	Bottles, Dropping, Schuster's.	With stopper.	capacity 1 oz... .30
		Capacity	capacity 2 oz... .40
		Each	\$0.20 .25
523	Bottles, Dropping, "Patent Dropper."		
		Capacity	½ 1 2 oz.
		Each	\$0.20 .25 .30
523a	Bottles, Dropping, "Patent Dropper."	Amber colored, capacity 1 oz.....	.25
524	Bottles, Dropping or Acid Bottle.	With ball stopper.	
		Capacity	1 2 oz.
		Each	\$0.45 .50
525	Bottles, Mixing.	Graduated and glass stoppered.	
		Capacity	250 500 1000 2000 cc.
		Each	\$1.00 1.50 2.50 4.00



No.

526 Bottles, Specific Gravity, unadjusted, for self adjustment, perforated stopper.

Capacity	10	25	50	100 cc.
Each	\$0.25	.30	.40	.50

527 Bottles, Specific Gravity, accurately adjusted, perforated stopper.

Capacity	10	25	50	100 cc.
Each	\$0.50	.70	.90	1.10

528 Bottles, Specific Gravity, with thermometer ground into neck.

Capacity	25	50	100 cc.
Each	\$1.75	2.00	2.50

529 Bottles, Specific Gravity, Geissler's, with thermometer ground into neck, and capillary side tube.

Capacity	10	25	50 cc.
Each	\$2.25	2.50	3.00

530 Bottles, Specific Gravity, same as No. 527, with tare weight, in lacquered tin box.

Capacity	10	25	50	100 cc.
Each	\$1.25	1.50	2.00	2.50

531 Bottles, Specific Gravity, same as No. 528, with tare weight, in lacquered tin box.

Capacity	250	500	1000 grains.
Each	\$1.50	1.75	2.00

532 Bottles, Specific Gravity, Regnault's. With wide mouth for solids.

Capacity	25	50 cc.
Each	\$0.50	.60

533 Bottles, Specific Gravity, Regnault's. With narrow mouth for liquids.

Capacity	25	50 cc.
Each	\$0.40	.50

533a Bottles, Specific Gravity, Sprengel's, plain U shape with suction tube, each \$0.75

534 Bottles, Wash Bottles; Fresenius. Complete with rubber stopper.

Capacity	4	8	12	16	24	32 oz.
Each	\$0.35	.40	.45	.50	.60	.75



535



536



537



538



539

No.
535 Bottles, Wash Bottles; Drechel's. All glass.
Capacity 8 16 32 oz.
Each \$1.00 1.25 1.50

536 Bottles, Wash Bottles; Langbein's; with two glass stopcocks.
Capacity 8 16 oz.
Each \$2.50 2.75

537 Bottles, Weighing, for filters. Wide mouth and ground hollow stopper.
Height 50 50 50 65 75 100 mm.
Dia. 20 30 40 12 15 25 mm.
Each \$0.25 .30 .40 .25 .30 .40

538 Bottles, Weighing, Conical Form, with light stopper.
Capacity 1 2 4 oz.
Each \$0.40 .50 .60

539 Bottles, Weighing, two tubes, one fitting into the other.
Length 70 75 80 mm.
Dia. 15 20 25 mm.
Each \$0.20 .25 .30



540



541



542



542a

540 Bottles, Woulff Bottles, with two necks.
Capacity $\frac{1}{4}$ $\frac{1}{2}$ 1 pt. 1 qt. $\frac{1}{2}$ 1 2 gal.
Each \$0.40 .45 .55 .85 1.25 2.25 4.00

541 Bottles, Woulff Bottles, with three necks.
Capacity $\frac{1}{4}$ $\frac{1}{2}$ 1 pt. 1 qt. $\frac{1}{2}$ 1 2 gal.
Each \$0.45 .50 .60 .95 1.40 2.50 4.50

542 Bottles, Woulff Bottles, with three necks and tubulation near bottom.
Capacity 1 pt. 1 qt. $\frac{1}{2}$ 1 2 gal.
Each \$0.90 1.20 1.75 2.75 5.00

542a Bottles, De-aerating, as used in sugar factories, for separating the air from
the juice Each \$2.00

Reagent Bottles with Ground Glass Labels



543

N. B. These bottles have the chemical names and equivalents in raised letters ground on the surface. They are made from glass containing no lead, zinc or other metallic flux.

Please order by numbers.

Note:—Any names not on the list can be engraved on the bottles at small extra charge.

No. 543 Reagent Bottles. Capacity, $\frac{1}{4}$ pt. = 4 oz. = 125 cc. Height, $5\frac{1}{4}$ in., Doz., Net \$1.75

No.	No.
1. Hydrogen Sulphide (Amb.) $.H_2S$	20. Barium Chloride..... $BaCl_2$
2. Hydrochloric Acid..... HCl	21. Calcium Chloride..... $CaCl_2$
3. Acetic Acid..... $HC_2H_3O_2$	22. Calcium Sulphate..... $CaSO_4$
4. Sulphuric Acid..... H_2SO_4	23. Calcium Hydroxide..... $Ca(OH)_2$
5. Nitric Acid..... HNO_3	24. Magnesium Sulphate..... $MgSO_4$
6. Potassium Ferrocyanide... $K_4Fe(CN)_6$	25. Mercuric Chloride..... $HgCl_2$
7. Potassium Sulphocyanide.. $KCNS$	26. Silver Nitrate (Amber)... $AgNO_3$
8. Potassium Carbonate..... K_2CO_3	27. Lead Acetate..... $Pb(C_2H_3O_2)_2$
9. Potassium Sulphate..... K_2SO_4	28. Ferrous Sulphate..... $FeSO_4$
10. Potassium Iodide..... KI	29. Ferric Chloride..... Fe_2Cl_6
11. Potassium Ferricyanide... $K_3Fe(CN)_6$	30. Alcohol..... C_2H_5OH
12. Potassium Hydroxide..... KOH	31. Ammonium Sulphocyanide. NH_4CNS
13. Potassium Dichromate.... $K_2Cr_2O_7$	32. Barium Hydroxide..... $Ba(OH)_2$
14. Sodium Phosphate Na_2HPO_4	33. Barium Carbonate..... $BaCO_3$
15. Ammonium Hydroxide..... NH_4OH	35. Ether..... $(C_2H_5)_2O$
16. Ammonia Sulphide (Amb.) $.(NH_4)_2S$	36. Cupric Sulphate..... $CuSO_4$
17. Ammonium Chloride..... NH_4Cl	38, 39, 40, Blank.
18. Ammonium Carbonate..... $(NH_4)_2CO_3$	59. Sodium Carbonate..... Na_2CO_3
19. Ammonium Oxalate..... $(NH_4)_2C_2O_4$	61. Sodium Hydroxide..... $NaOH$

543a 1 set of above 40 bottles, packed in shipping order Set, Net \$6.00

543b 1 set of above 40 bottles, filled with chemically pure reagents, according to Fresenius; bottles included Set, Net 12.50

No.

543c Reagent Bottles. Same style as No. 543; capacity, 4 oz..... Doz., Net \$1.75

No.

37. Platinic Chloride.....PtCl₄
 58. Fehling's Solution.
 59. Sodium Carbonate.....Na₂CO₃
 60. Sodium Acetate.....NaC₂H₃O₂
 61. Sodium Hydroxide.....NaOH
 77. Ammonia.....NH₃
 81. Stannous Chloride.....SnCl₂
 82. Ammonium Molybdate.....(NH₄)₂MoO₄
 83. Carbon Disulphide.....CS₂
 86. Mercurous Nitrate.....Hg₂(NO₃)₂
 87. Indigo Solution.
 88. Nessler's Solution.
 90. Magnesia Mixture.
 93. Oxalic Acid.....H₂C₂O₄
 94. Picric Acid.....C₆H₂OH(NO₂)₃
 96. Potassium Chromate.....K₂CrO₄

No.

97. Ammonium Sulphydrate.....NH₄HS
 100. Mercuric Potassium Iodide.
 401. Barium Nitrate.....Ba(NO₃)₂
 404. Silver Sulphate.....Ag₂SO₄
 406. Bromine Water.
 407. Chloroform.....CHCl₃
 408. Cochineal.
 409. Coralline.
 410. Litmus.
 411. Methyl Orange.
 412. Phenolphthalein.
 413. Turmeric.
 414. Iodine Solution.....I + KI
 415. Methyl Alcohol.....CH₃OH
 416. Sodium Cobaltic Nitrite.
 417. Sodium Hyposulphite.....Na₂S₂O₃

544 Reagent Bottles. Capacity, $\frac{1}{2}$ pt. = 8 oz. = 250 cc. Height, 6½ in. Doz., Net \$2.25

No.

101. Sulphuric Acid, Con.....H₂SO₄
 102. Sulphuric Acid, Dil.....H₂SO₄
 103. Nitric Acid, Con.....HNO₃
 104. Nitric Acid, Dil.....HNO₃
 105. Hydrochloric Acid, Con....HCl
 106. Hydrochloric Acid, Dil....HCl
 107. Hydrogen Sulphide(Amb.)H₂S
 108. Ammonium Hydroxide... NH₄OH
 109. Ammonium Chloride.... NH₄Cl
 110. Ammonium Carbonate....(NH₄)₂CO₃
 111. Sodium Hydroxide.....NaOH

No.

112. Sodium Carbonate.....Na₂CO₃
 114. Barium Chloride.....BaCl₂
 116. Blank.
 122. Ammonium Sulphide(Amb.) (NH₄)₂S
 129. Sodium Phosphate.....Na₂HPO₄
 130. Ammonium Oxalate.....(NH₄)₂C₂O₄
 131. Acetic Acid.....HC₂H₃O₂
 145. Silver Nitrate (Amber)...AgNO₃
 150. Potassium Hydroxide.... KOH
 151. Calcium Hydroxide.....Ca(OH)₂
 152. Lead Acetate.....Pb(C₂H₃O₂)₂

545 Reagent Bottles. Capacity, 1 pt. = 500 cc. Height, 7¾ in Doz., Net \$3.25

No.

204. Ammonium Hydroxide... NH₄OH
 211. Blank.
 215. Sulphuric Acid.....H₂SO₄
 215a. Sulphuric Acid, Dil.....H₂SO₄+Aq

No.

216. Nitric Acid..... HNO₃
 216a. Nitric Acid, Dil.....HNO₃+Aq
 217. Hydrochloric Acid.....HCl
 217a. Hydrochloric Acid, Dil... HCl+Aq

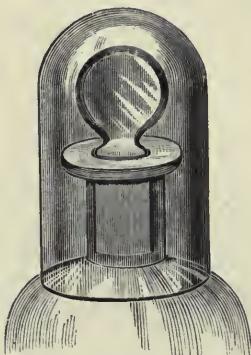
546 Reagent Bottles. Capacity 1 qt. = 1 litre. Height, 9½ in. Doz., Net \$4.00

No.

501. Sulphuric Acid, Con.....H₂SO₄
 502. Sulphuric Acid, Dil.....H₂SO₄
 503. Nitric Acid, Con.....HNO₃
 504. Nitric Acid, Dil.....HNO₃

No.

505. Hydrochloric Acid, Con... HCl
 506. Hydrochloric Acid, Dil.... HCl
 511. Blank.



550

No.

547 Reagent Bottles. Capacity, 1 oz. = 30 cc. Height, 3 $\frac{1}{8}$ in. Doz., Net \$1.25

No.

325. Silver Nitrate (Amber)....	AgNO_3
326. Cobaltous Nitrate.....	$\text{Co}(\text{NO}_3)_2$
327. Platinic Chloride.....	PtCl_4

No.

336. Gold Chloride.....	AuCl_3
341. Blank.	

548 Reagent Bottles; wide mouth. Capacity 1 oz. = 30 cc. Height, 3 $\frac{1}{8}$ in.

Doz., Net \$1.35

No.

350. Sodium Carbonate.....	Na_2CO_3
351. Borax.....	$\text{Na}_2\text{B}_4\text{O}_7$
353. Sodium Acetate.....	$\text{NaC}_2\text{H}_3\text{O}_2$
354. Potassium Nitrate.....	KNO_3
358. Potassium Cyanide.....	KCN
361. Am. Soda. Phosphate.....	$\text{NaNH}_4\text{HPO}_4$
364. Copper.....	Cu
365. Ferrous Sulphate.....	FeSO_4
366. Ferrous Sulphide.....	FeS

No.

367. Potassium Chlorate.....	KClO_3
368. Potassium Ferricyanide... K ₃ Fe(CN) ₆	
369. Sodium Bitartrate.....	$\text{NaHC}_4\text{H}_4\text{O}_6$
370. Sodium Nitrate.....	NaNO_3
371. Starch.	
372. Test Paper.	
373. Zinc.	
374. Ammonium Phosphate....	$(\text{NH}_4)_2\text{HPO}_4$
375. Blank.	

549 Reagent Bottles; wide mouth. Capacity, 4 oz. = 125 cc. Height, 4 $\frac{1}{8}$ in.

Doz., Net \$2.00

No.

301. Sodium Carbonate.....	Na_2CO_3
302. Potassium Nitrate.....	KNO_3
303. Potassium Cyanide.....	KCN
304. Borax.....	$\text{Na}_2\text{B}_4\text{O}_7$

No.

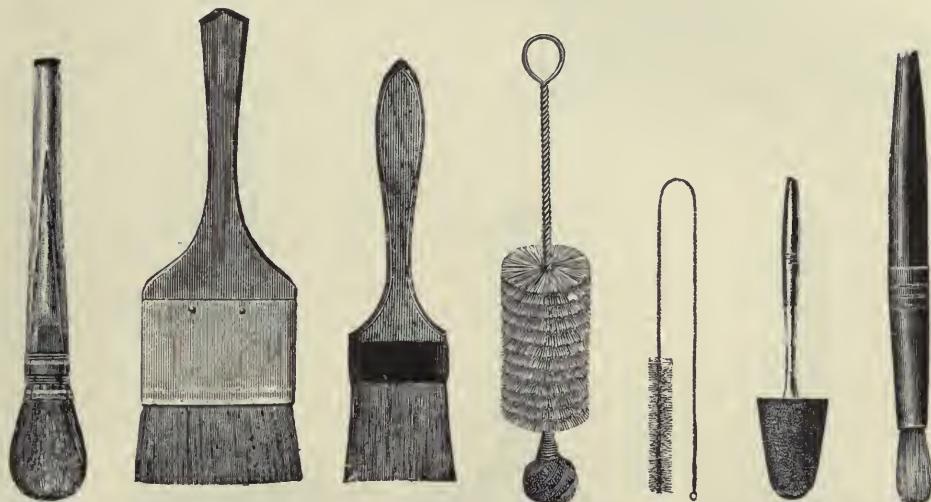
305. Ferrous Sulphate.....	FeSO_4
307. Blank.	
312. Test Paper.	
313. Sod. Ammon. Phosphate.	

550 Reagent Bottle Caps. To protect stoppers and mouth of bottles from dust.

Size to fit	4	8	16	32 oz. Bottles.
Doz.	\$0.80	.90	1.00	1.20

550a Brooms. Miners' Whisks, well made Each, \$0.30; Doz., \$3.00

BRUSHES



No.							
551	Brushes; spun glass. For acids						\$0.25
552	Brushes; camel hair pencils.						
	Size	Small	Medium	Large			
	Doz.	\$0.15	20	.30			
553	Brushes; camel hair. Extra large stock, $\frac{1}{2}$ in. dia., quill holder ...	Each					.20
554	Brushes; camel hair. Stock 1 in. dia., quill holder, wooden handle .....						.75
555	Brushes; camel hair, flat tin bound. Wooden handle; for scale pans, etc.						
	Width	$\frac{1}{2}$	1	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3 in.
	Each	\$0.15	.20	.30	.40	.50	.70
556	Brushes; camel hair, flat, hard rubber bound. Wooden handle.						
	Width	1	$1\frac{1}{2}$	2	$2\frac{1}{2}$	3 in.	
	Each	\$0.50	.80	1.00	1.25	1.75	
556a	Brushes; bristle, for test tubes. Bristle end, on tinned iron wire						
	Each .05 .....						.30
557	Brushes; bristle, for test tubes. With sponge ends; these are superior, inasmuch as the brass wire holding the sponge is twisted in a loop, thus protecting the test tubes from breakage.						
	Size	for $\frac{5}{8}$ in.	for $\frac{3}{4}$ in. t. t.				
	Doz.	\$0.75	.85				
558	Brushes; bristle, for long tubes, burettes, etc. Three feet long	Each					.15
559	Brushes; bristle, for narrow tubes. Two inches length of bristle	Doz.					.15
560	Brushes; bristle, for cylinders, large tubes, bottles, etc. Wire handle.						
	Length	10	12	15	20 in.		
	Each	\$0.10	.15	.20	.25		
561	Brushes; bristle, wood handle. For beakers	Each					.20
562	Brushes; bristle, round stiff. For brushing out platinum crucibles, etc ...						.10



567



570



No. 565

563 Brushes; bristle, flat, hard rubber bound. Wooden handle.
Width 1 1½ 2 2½ 3 in.

Each \$0.30 .40 .60 .80 1.00

564 Brushes; bristle, for assay buttons, Freiberg pattern. Genuine bristle, set
in firmly Each \$0.50565 Brushes; bristle, for buck board cleaning, flat. Well set in block.
Width 3 3½ 4 5 in.

Each \$0.60 .70 .80 1.00

566 Brushes; bristle, for buck board cleaning, D. F. C. Co.'s Special, flat, tin
bound. Good solid stock, firmly set.

Width 3 3½ 4 5 in.

Each \$0.80 1.00 1.20 1.50

566a Brushes; bristle, for buck board cleaning, flat, rubber set.
Width 3 3½ 4 5 in.

Each \$1.00 1.25 1.50 2.00

567 Brushes; bristle, for buck board cleaning, flat. Rounded handle; extra
quality stiff bristles; width, 8 in.; length below binding, 2½ in.....

1.20

568 Brushes; for buck board cleaning85

569 Brushes; bristle, for buck board cleaning, softer than foregoing.

No. 6 7 8 9

Length of brush 6 10 10 10 in.

Length of bristle 2½ 2¾ 3½ 4 in.

Each \$1.00 1.25 1.50 2.00

570 Brushes; wire, for scouring bullion. Double end.

Steel : .50

Brass : .50

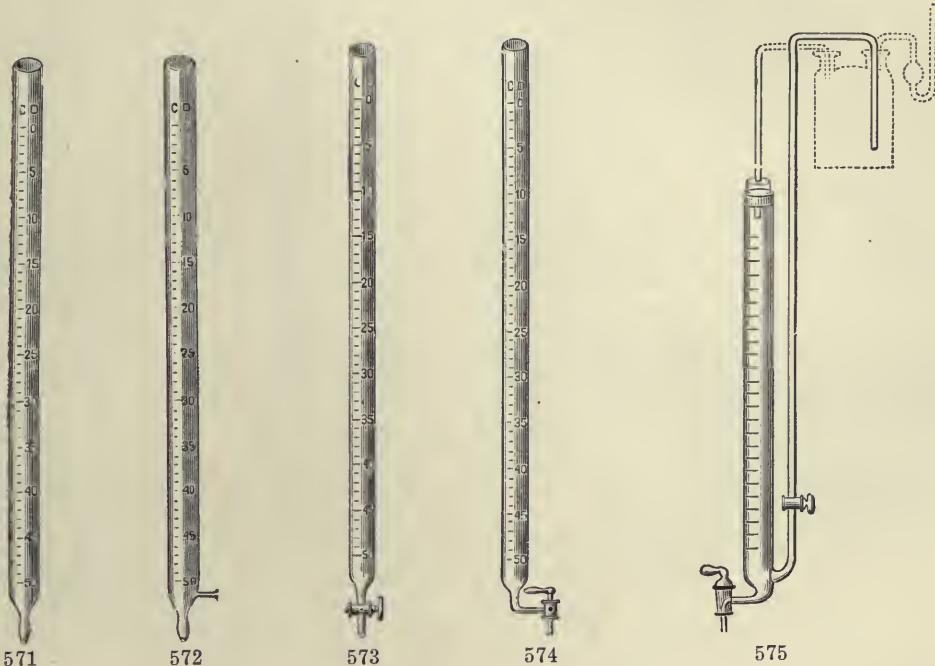


564

568

569

BURETTES



No.

571 Burettes; Mohr's. Most accurately graduated, for pinchcocks; with tip and rubber connection.

Capacity	25	50	100	100 cc.
Grad.	1-10	1-10	1-5	1-10 cc.
Each	\$0.65	1.20	1.50	2.00

572 Burettes; Mohr's, with side filling tube. For pinchcocks, with tip and rubber connection.

Capacity	25	50	100	100 cc.
Grad.	1-10	1-10	1-5	1-10 cc.
Each	\$0.75	1.25	1.75	2.20

573 Burettes; Mohr's, with Geissler's glass stopcock.

Capacity	25	50	100	100 cc.
Grad.	1-10	1-10	1-5	1-10 cc.
Each	\$1.35	1.85	2.35	2.50

574 Burettes; Fresenius', with glass stopcock.

Capacity	25	50	100 cc.
Grad.	1-10	1-10	1-10 cc.
Each	\$1.35	1.85	2.50

575 Burettes; Gawalowsky's, with glass stopcock and glass side tube with stopcock, for filling from reservoir.

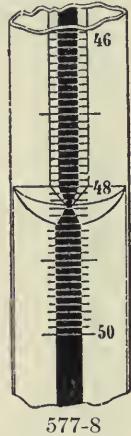
Capacity	25	50	100 cc.
Grad.	1-10	1-10	1-10 cc.
Each	\$2.50	3.00	4.50



576



576a



577-8



579



580

No.

576 Burettes; Patent, with 3 ways glass stopcock and tube for filling from reservoir.

Capacity	25	50	100 cc.
Grad.	1-10	1-10	1-10 cc.
Each	\$2.00	2.50	3.50

576a Burettes; Patent, Automatic, with zero point and overflow reservoir.

Capacity	25	50	100 cc.
Grad.	1-10	1-10	1-10 cc.
Each	\$3.00	3.50	4.50

577 Burettes; Schellbach's. With dark enameled stripe on white enamel background, giving a definite meniscus; with tip and rubber connection.

Capacity	25	50	100 cc.
Grad.	1-10	1-10	1-10 cc.
Each	\$1.20	1.50	2.50

578 Burettes; Schellbach's, with glass stopcock.

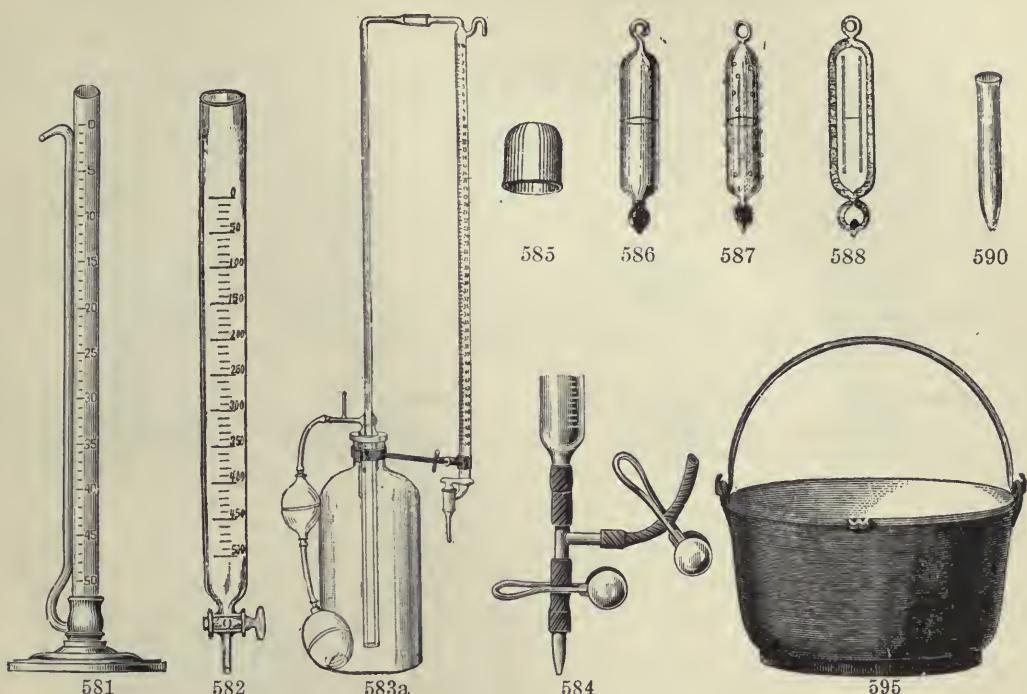
Capacity	25	50	100 cc.
Grad.	1-10	1-10	1-10 cc.
Each	\$2.00	2.50	3.50

579 Burettes; Schellbach's, with patent stopcock.

Capacity	25	50	100 cc.
Grad.	1-10	1-10	1-10 cc.
Each	\$2.25	3.00	4.00

580 Burettes; D. F. C. Co.'s. With absolutely tight stopcock, bored at an angle of 45 degrees.

Capacity	25	50	100 cc.
Grad.	1-10	1-10	1-10 cc.
Each	\$1.50	2.00	3.00



No.

581 Burettes; Gay Lussac's. On polished wooden base.

Capacity	25	50	100 cc.
Grad.	1-10	1-10	1-5 cc.
Each	\$1.00	1.50	2.00

582 Burettes; Dispensing, with glass stopcock. For liquids in larger quantities.

Capacity	250	500	1000 cc.
Each	\$2.50	3.00	4.00

583 Burettes; Dispensing, without stopcock. For liquids in larger quantities.

Capacity	250	500	1000 cc.
Each	\$1.50	2.00	3.00

583a Burette Titration Apparatus. Ground joints, with automatic zero point.

Burette, complete with bottle, rubber bulb and clamp.

Capacity, 25 cc., 1-10	Net	\$5.00
Capacity, 50 cc., 1-10	Net	6.00

584 Burette Attachment. For connecting the burette with reservoir, complete, as per sketch

.50

585 Burette Caps. To protect contents of burettes from dust, assortedDoz. .50

586 Burette Float, Erdmann's Each .30

587 Burette Float, Volhard's. With points to prevent adhering to walls .. Each .50

588 Burette Float, Benedikt's Each .40

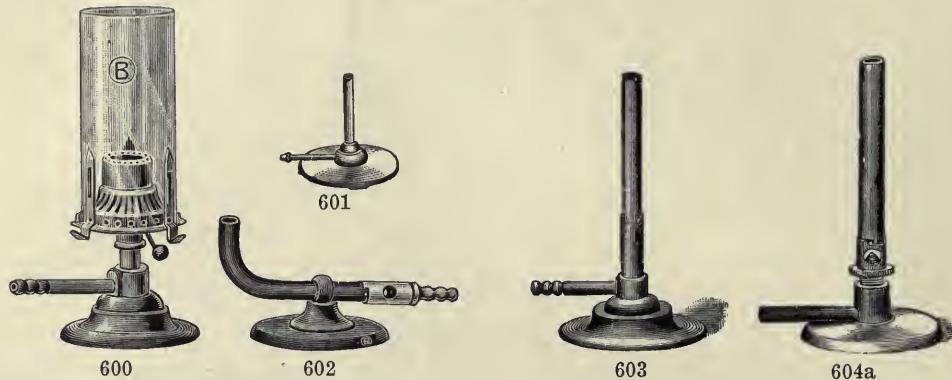
589 Burette Float, Beutell's Each .35

590 Burette Tips Each, \$0.05; Doz. .40

595 Buckets; Amalgam or Quicksilver. Of iron, inside white enamel.

Capacity	2	3	4	6	8	12 qts.
Each	\$0.40	.50	.60	.70	.80	1.00

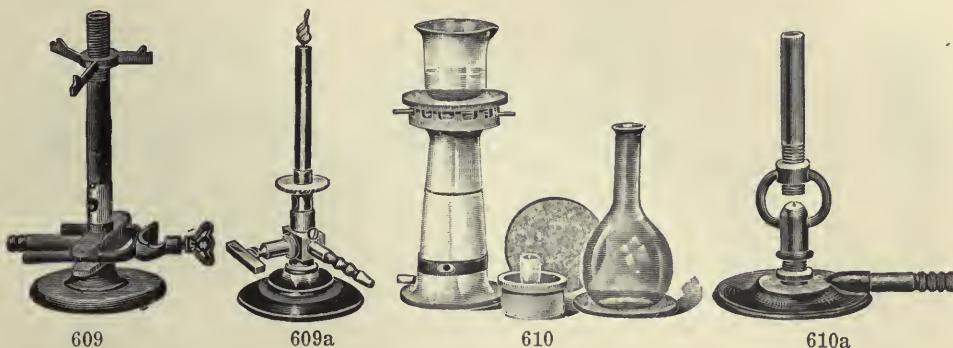
BURNERS



No.	Description	Price
600	Burner; Argand. Low form, 7 in. high, giving a steady and large flame, which can be turned down very low, with chimney	\$1.10
601	Burner; Bunsen's. Small form, nickelized; 2 in. high, tube 3-16-in. dia.....	.50
602	Burner; Bunsen's, low shape. With air regulator .....	.50
603	Burner; Bunsen's, Usual size, with air regulator .....	.35
604	Burner; Bunsen's. Large tube, 1/2-in. diameter .....	.50
604a	Burner; Bunsen's Improved. With flame check and gas regulator.....	1.00



605	Burner; Bunsen's. With 2 tubes, and air regulators.....	\$1.25
605a	Burner; Bunsen's. With 3 tubes, and air regulators	1.50
605b	Burner; Bunsen's. With 4 tubes, and air regulators	2.00
606	Burner; Bunsen's. With 4 burners, in one row, for heating long tubes ...	4.50
607	Burner; Same as above, with stopcocks	6.00
608	Burner; Bunsen's Self-adjusting, for burning gases of various qualities ...	1.50
608a	Burner; Bunsen's, for gasoline gas .....	.75



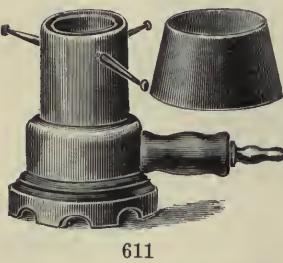
609

609a

610

610a

No.			\$1.50
609	Burner; Bunsen's, with fork to attach to ring stand, and star for chimney		
609a	Burner; Bunsen's, constant flame, with stopcock	2.00	
610	Burner; Chaddock's. Of porcelain, incorrodible; for use in hoods where metal on account of the smoky flame, soon corrodes. Complete with support for dishes, chimney and three asbestos pads.....	2.00	
610a	Burner; Detroit style, for gasoline gas	1.00	



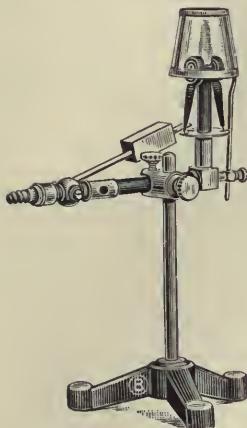
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614



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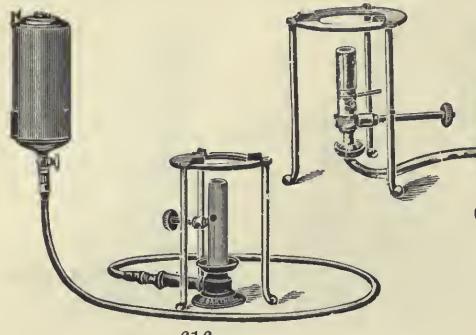


613a



615

611	Burner; Erlenmeyer's. Giving an intensely hot flame.....	\$3.00
612	Burner; Koch's Safety. On adjustable stand.....	10.00
612a	Burner; Koch's Safety, simple form, 6 in. high	6.00
613	Burner; Teclu's. Giving a large and powerful flame, 3/4-in. tube.....	1.75
613a	Burner; Illuminating. Table light, 12-in. high	1.00
614	Burner; Barthel's Alcohol. Absolutely safe, approximate heat 1300°C	5.00
615	Burner; Barthel's benzine-boiler. With tube for Bunsen flame.....	6.00

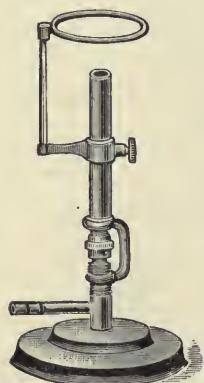


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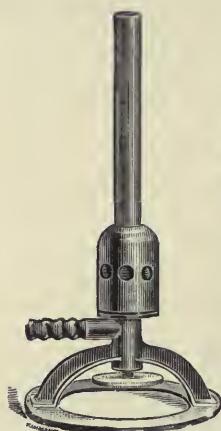
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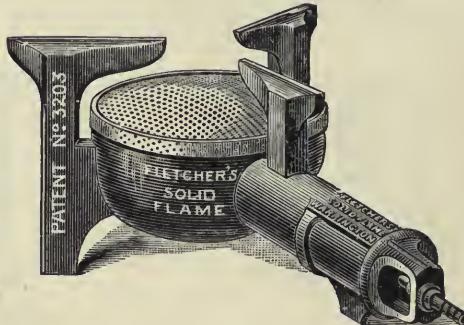
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618a

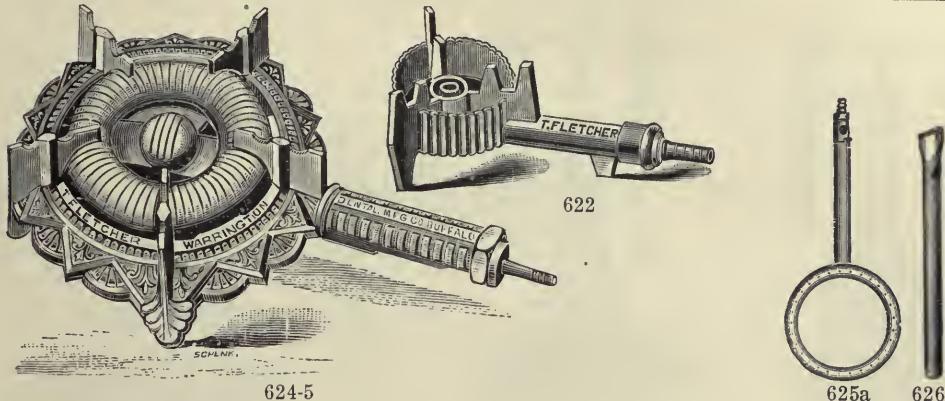


619

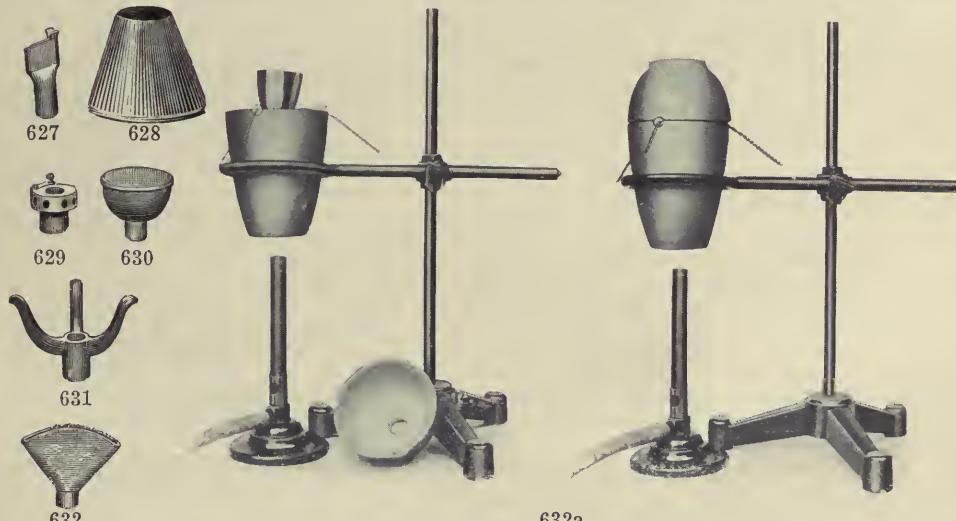


620-1

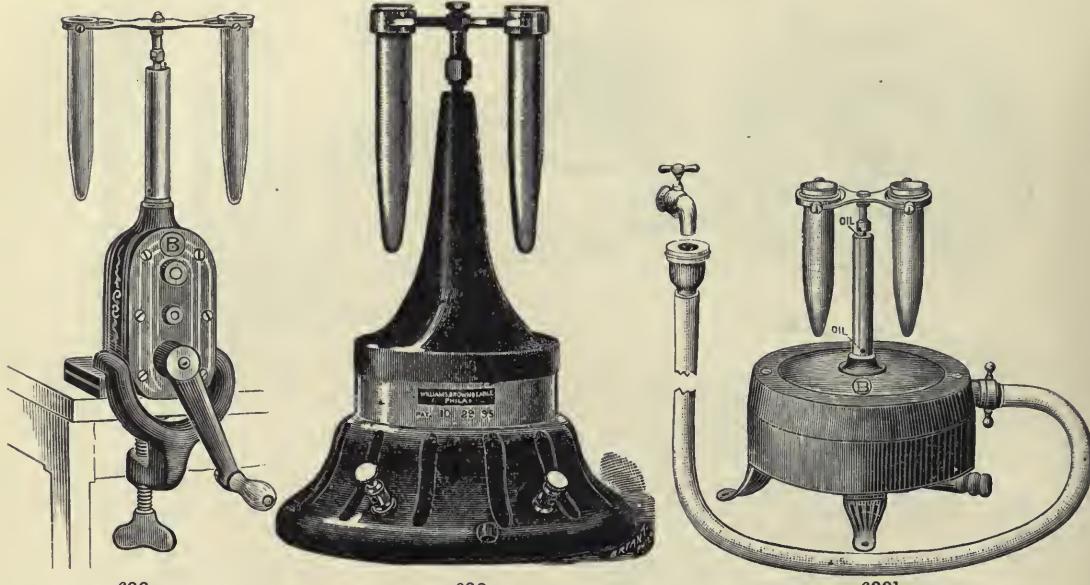
No.						
616	Burner, Barthel's Alcohol. Bunsen's style, equal to 4 Bunsen gas burners, complete with reservoir and 5 ft. flexible metallic tubing					\$9.00
	Tripod for same .....					.50
617	Burner, Barthel's Benzine. Working without wick; equal to 2 Bunsen gas burners					7.00
	Tripod for same .....					.50
617a	Burner, Turner's Gasoline, brass, nickel-plated, capacity $\frac{1}{2}$ pint					3.00
618	Burner, Bunsen's Adjustable. Its adjustability renders it a favorite burner for those using gasoline gas, or the mixture of gasoline vapor and air made by gas machines.....					1.00
618a	Burner, same as No. 618, with adjustable support					2.00
619	Burner, Tirrill's. For gasoline gas; very highly recommended					1.20
619a	Burner, Fletcher's Evaporating Burner.					
	Size	4	5	6 $\frac{1}{2}$ -in. dia.		
	Each	\$1.00	1.25	2.00	Net	
620	Burner, Fletcher's Solid Flame Boiling Burner.					
	Size	Small	Large			
	Each	\$1.00	2.00	Net		
621	Burner, Fletcher's Solid Flame. For gasoline gas; with wheel valve.					
	Size	Small	Large			
	Each	\$1.75	3.00	Net		
621a	Burner, Fletcher's Extra Gauze Tops, for No. 620-1.					
	Size	Small	Large			
	Each	\$0.30	.35			



No.	Burner, Fletcher's, Argand Style.			
622	Size	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$ in.
	Each	\$0.65	1.00	1.25 Net
Burner, Fletcher's Radial Burner.				
624	Ring Dia.	$3\frac{3}{4}$	5 in.	
	Each	\$1.50	2.00	Net
Burner, Fletcher's Radial. For gasoline gas; wheel valve regulator.				
625	Ring Dia.	$3\frac{3}{4}$	5 in.	
	Each	\$2.25	3.00	Net
Burner, Ring Form.				
625a	Size	3	4	5 6-in. dia.
	Each	\$1.25	1.50	1.75 2.00
Burner Attachment. To set into the Bunsen burner, "Burner tube"				\$0.15
626				



627	Burner Attachment. To set over the burner; with rest for the blow pipe...	\$0.15
628	Burner Chimneys. Of Russian iron .....	.20
629	Burner Crowns. For heating dishes .....	.35
630	Burner Gauze Top. Giving a large round flame...	.25
630a	Burner Plates, of porcelain .....	.60
631	Burner Tripods. For supporting dishes .....	.20
632	Burner Wingtop. For bending glass tubing .....	.15
632a	Burner, High Temperature, Without Blast. Designed for high temperature fusions. Very efficient and in many cases does away with the blast lamp in the laboratory. Price, complete, without platinum crucible..	2.50



633

633a

633b

No.

633	Centrifuge, Hand, for urine, sputum, milk and water analysis, gives 3,000 revolutions per minute. Complete with one graduated and one ungraduated sedimentation tube	Net \$10.00
	Graduated sedimentation tubes	Each .35
	Ungraduated sedimentation tubes	Each .15
	Graduated Milk tubes	Each .50
633a	Centrifuge, Electric, for immediate separation and precipitation of solids held in suspension in liquids. For use in the testing of ores and for the precipitation of lead salts in manganese determination. The Electric Centrifuge is arranged to run on either the direct or alternating incandescent circuit of 104 to 115 volts, but can be arranged for the 220-volt direct current at an additional cost if required. It is a most valuable means of obtaining immediate sedimentation of solids, thus effecting a great saving of time in many chemical operations. The liquid containing the matter to be precipitated is placed in the swinging glass tubes which are protected by metal shields, the machine is then revolved at high speed and the solids are immediately precipitated to the bottom of the tubes. Centrifuge, as shown in cut, with two glass tubes of 15 cc. capacity, protected by metal shields	Net 32.00
	Extra percentage tubes	Each .50
	Sediment tubes	Each .20
	This Electric Centrifuge is mounted on a very heavy iron base, giving it the rigidity absolutely essential for accurate work. The Centrifuges for the 110-volt direct current and 105-volt, 60-cycle alternating current are arranged with controlling lever in base giving medium and high speed.	
	When ordering, specify the voltage of the current on which the centrifuge is to be operated and whether the current is "Direct," "Alternating 60 Cycles" or "Alternating 125 to 133 Cycles."	
633b	Centrifuge, Water Motor, for the rapid and convenient sedimentation of solids in urine and other fluids. Perfect mechanical construction. Absolutely noiseless. Contact parts cannot become rusted. Needs no attention. May be left running constantly. Anyone can operate it. The simplest and most efficient power centrifuge yet offered. Price	Net 10.00
	Sedimentation tubes, plain	Each .15
	Sedimentation tubes, graduated	Each .35
	Milk tubes, graduated	Each .50

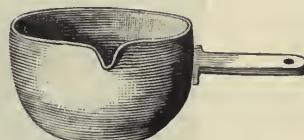


634

No.							
634	Button Trays.	For silver buttons, plates $5\frac{1}{2}$ x $2\frac{1}{4}$ in., with 24 depressions of $\frac{3}{8}$ -in dia. and $\frac{1}{8}$ -in. deep, milled smooth, neatly finished, for use inside of balance case					\$0.75
634b	Carboy Inclinator, Flaherty's,	for convenient drawing of liquids from carboys		Each			6.00



635



635a

635 **Casseroles; Royal Berlin Porcelain.** With porcelain handle.

No.	1	2	3	3a	4	5	6
Dia.	2	$2\frac{3}{4}$	$3\frac{1}{4}$	$3\frac{3}{4}$	$4\frac{1}{4}$	$5\frac{1}{4}$	$6\frac{1}{2}$ in.
Capacity	1	3	5	8	13	24	44 oz.
Each	\$0.35	.40	.50	.70	.85	1.40	1.75

635a **Casseroles; German Porcelain.** With porcelain handle.

Capacity	1	2	4	8	12	16	32 oz.
Each	\$0.20	.25	.30	.35	.55	.80	1.00



636



637

636 **Casseroles; German Porcelain.** With cover and wooden handle.

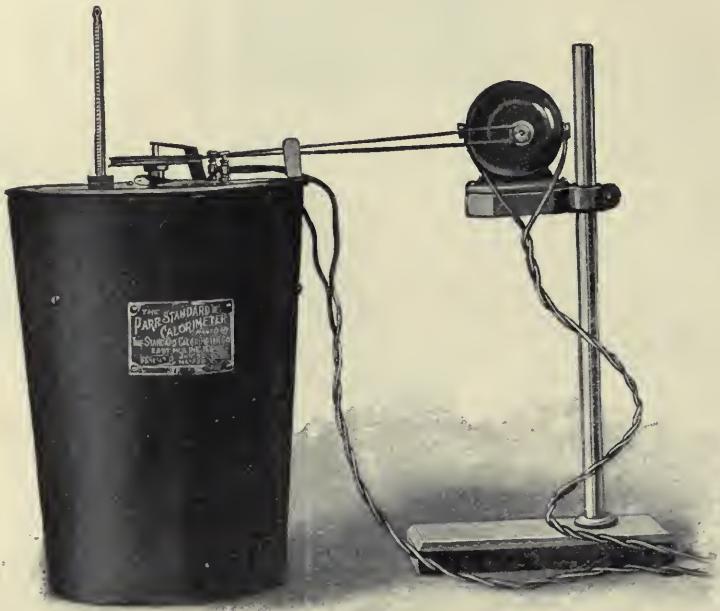
Dia.	3	4	$4\frac{1}{2}$	5	6	$6\frac{1}{2}$ in.	.
Capacity	4	8	12	16	24	32	oz.
Each	\$0.50	.60	.70	.90	1.25	1.60	

637 **Casseroles; Agateware.**

Dia.	$4\frac{1}{2}$	5	6	7 in.
Capacity	1 pt.	24 oz.	1 qt. $\frac{1}{2}$ gal.	
Each	\$0.25	.30	.35	.45

638 **Chamois Skins.** Best quality, entirely waterproof; size 16 x 18 in....Each \$0.75

640 **Charcoal,** of hard wood, cut in oblong pieces $4\frac{1}{2}$ x 1 in.; for blow pipe use
Dozen .50



640a

No.

640a **Calorimeter.** Parr's Standard Calorimeter. Devised by Prof. S. W. Parr, of the University of Illinois.

The marked features of the method are accuracy, simplicity, ease and rapidity of manipulation. The results are absolute, not relative. The operations are such as can be carried on by one not especially skilled in laboratory processes. Oxygen under pressure or otherwise is not used.

The instrument, as priced, includes the Calorimeter proper, a guaranteed accurate thermometer graduated to 1-20°F.; a 2000 cc. graduated flask measuring cup, 5-inch brass sieve 100 mesh, pincers, reading lenses, camel's hair brush, igniting wire and chemicals for fifty determinations.

Price complete, for wire ignition	\$70.00
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Price, complete, for electrical ignition, including battery	75.00
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Price of water motor, for stirring	5.00
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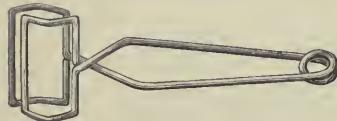
Descriptive circular on application.

Any other make of Calorimeter quoted on application. Hempel, Junker, Mahler, Thompson, Emerson, etc.

CLAMPS



641



642-642a



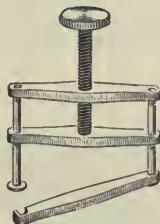
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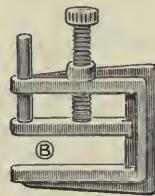
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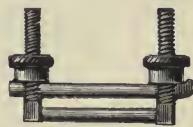
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647a

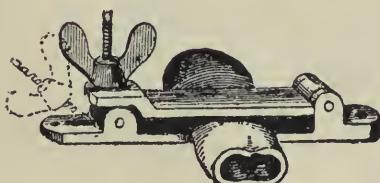


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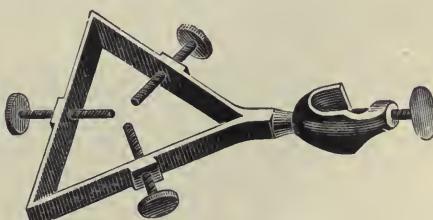


649

No.					
641	Clamps, wood, for test tubes.	With rubber band	Each	\$0.15	
642	Clamps, Stoddard's.	Of spring wire; for test tubes, 4½ in. long10	
642a	Clamps, Stoddard's.	For large test tubes, 6½ in. long.....		.15	
643	Clamps, Chaddock's, for test tubes.	Of japanned spring wire, rubber cov- ered jaws .....		.25	
644	Clamps, Chaddock's, for beakers.	Of japanned spring wire, rubber cov- ered jaws .....		.25	
645	Clamps, Chaddock's, for evaporating dishes.	Of japanned spring wire .....		.25	
646	Clamps, Mohr's, s. c. Pinchcocks.	Nickel-plated; strong spring.			
	Size	Small	Medium	Large	
647	Clamps, Hofmann's Screw Compressor.	Nickel-plated.			
	Size	Small	Large		
	Each	\$0.10	.12	.15	
647	Clamps, Hofmann's Screw Compressor.	Nickel-plated.			
	Size	Small	Large		
	Each	\$0.20	.25		
647a	Clamps, Hofmann's Screw Compressor.	Nickel-plated, improved form; can be used on tubing without disconnecting the apparatus	Each		.25
648	Clamps, Hofmann's, latest form.	Nickel-plated; for rubber tubing up to 1 in. Width $\frac{3}{4}$ 1½ in.			
	Each	\$0.20	.30		
649	Clamps, Bunsen's, for rubber tubing.	Of brass; 1½ in. wide .....			.30

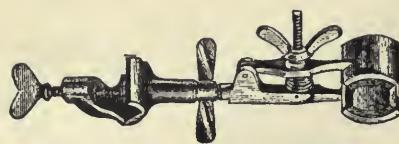


650



650a

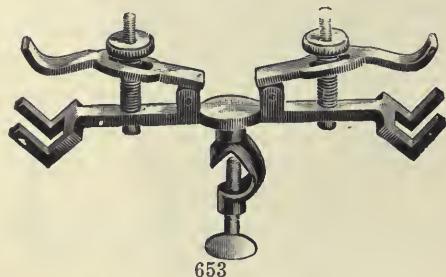
650	Clamps, Bunsen's, for heavy rubber tubing.	Can be screwed on table; to hold tubing up to 2 in.....		\$0.75	
650a	Clamps, Brass; triangle with adjustable screws, to support different sizes of crucibles				1.20



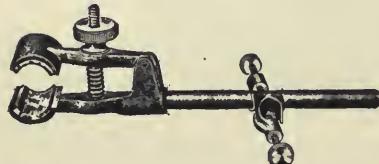
651



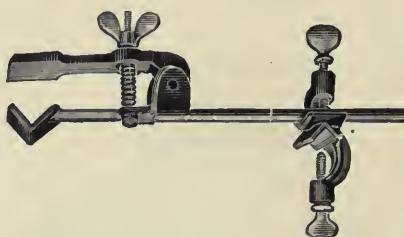
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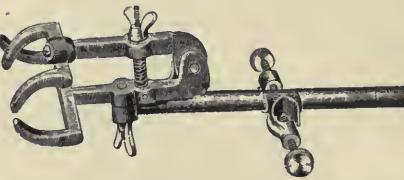
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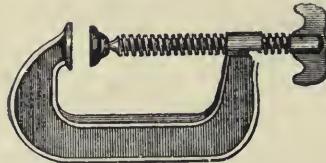
654



655



655a-656



657



659

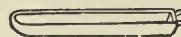
No.	Description	Size	Price
651	Clamps, for burettes, etc., with set screws, iron. To attach to a retort stand		\$0.40
652	Clamps, for burettes. With strong spring closing the movable jaw		.50
653	Clamps, Hofmann's Improved, for two burettes or tubes. Elegantly finished, of malleable iron		.75
654	Clamps, Bunsen's, for holding burettes, etc. With fastener complete		.75
655	Clamps, Bunsen's, for large tubes and condensers. With fastener complete		.75
655a	Clamps, Bunsen's Universal, for condensers, etc., the jaws adapting themselves to irregular shapes; with fastener complete		.80
656	Clamp, Bunsen's Universal, for very large apparatus, the jaws adapting themselves to irregular shapes; with fastener complete		1.25
657	Clamps, iron. For fastening apparatus to table.		
	Size opening 2 3 4 5 6 in.		
	Each \$0.20 .25 .35 .50 .60		
658	Clamp Holders. For fastening clamps to supports. (See Fig. 655.)		
	Size Small Large		
	Each \$0.20 .25		
659	Clamp Holders, Universal. To set at any angle		.50
660	Clay Tubes. Of fire clay; length 24 in.		
	Bore 1-16 1/8 in.		
	Price \$0.60 .60		

Note:—We will furnish estimates on any other size of clay tubes.

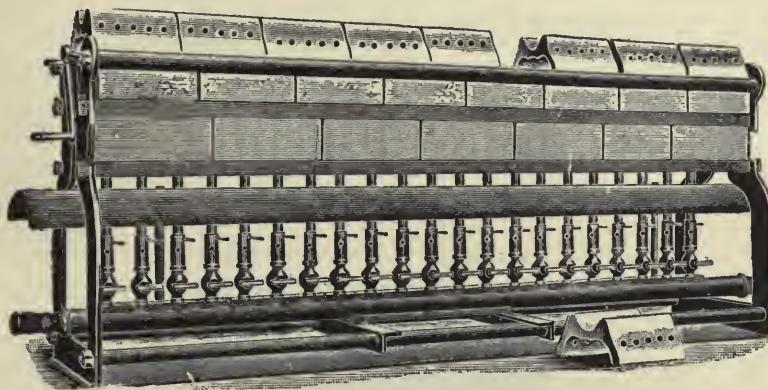
COMBUSTION FURNACES, ETC.



661

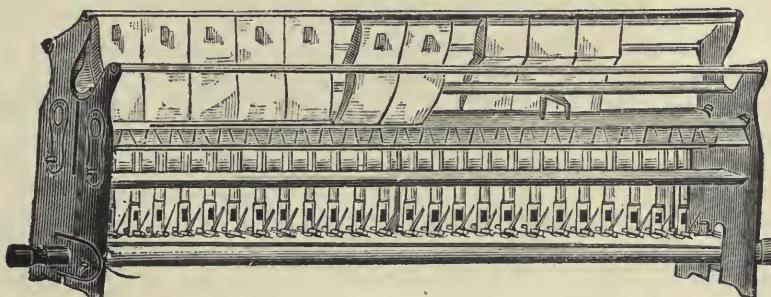


663



664

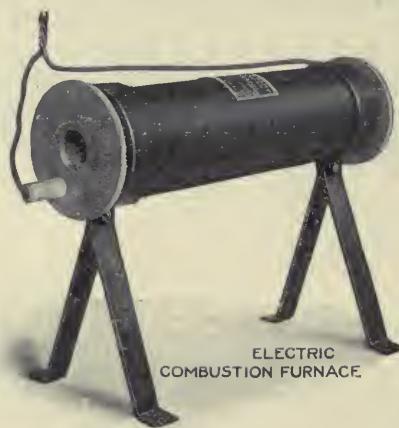
No.						
661	Color Test Plates, porcelain.	With 12 cavities; size, $3\frac{1}{4} \times 4\frac{1}{4}$ in.....			\$0.50	
		With 12 cavities; size, $5 \times 6\frac{1}{2}$ in.....			.60	
661a	Color Test Plates, porcelain.	With 30 cavities; size, $5\frac{1}{2} \times 7$ in.....			1.50	
		With 24 cavities; size, $4\frac{1}{2} \times 7$ in.....			1.25	
662	Color Test Plates, porcelain.	Without cavities; $5\frac{1}{2} \times 7$ in.....			1.20	
663	Combustion Boats, Royal Berlin Porcelain.					
	Size	45 x 12 mm.	55 x 12 mm.	75 x 12 mm.	100 x 12 mm.	100 x 20 mm.
	Each	\$0.20	.20	.25	.30	.35
664	Combustion Furnace, Glaser's.	Modified by Anschuetz & Kekule; with 21 burners and mica plates for watching the combustion; a first-class furnace			50.00	



665

665	Combustion Furnace, Bunsen's.	Each burner having separate stopcock.				
	Length	14	19	25	31 in.	
	Width	10	15	20	25 burners.	
	Each	\$18.00	24.00	30.00	36.00	

“ELECTRIC” COMBUSTION FURNACE



No.

665a Combustion Furnace “Electric.” Electric Combustion Furnace for rapid determination of carbon content of steels by the direct method. A complete combustion in 25 minutes. The tube is one (1") inch inside diameter and twelve (12") inches long; ten (10") inches of this length is uniformly heated to a constant temperature of 1000°C. In order to get this temperature be sure to let us know the exact voltage at the place where the furnace is to be used, otherwise we cannot guarantee results. Operates equally well on Direct or Alternating circuits and is made for 110 or 220 volts; other voltages to order. Requires 6 amperes at 110 volts, and 3 amperes at 220 volts. Price \$40.00



666

No. 666 Combustion Tubes, infusible glass. With drawn out point, bore 13 mm.
Any other diameter or length made to order.

Length	14	16	18	20	24 in.
Each	\$0.20	.25	.30	.35	.40



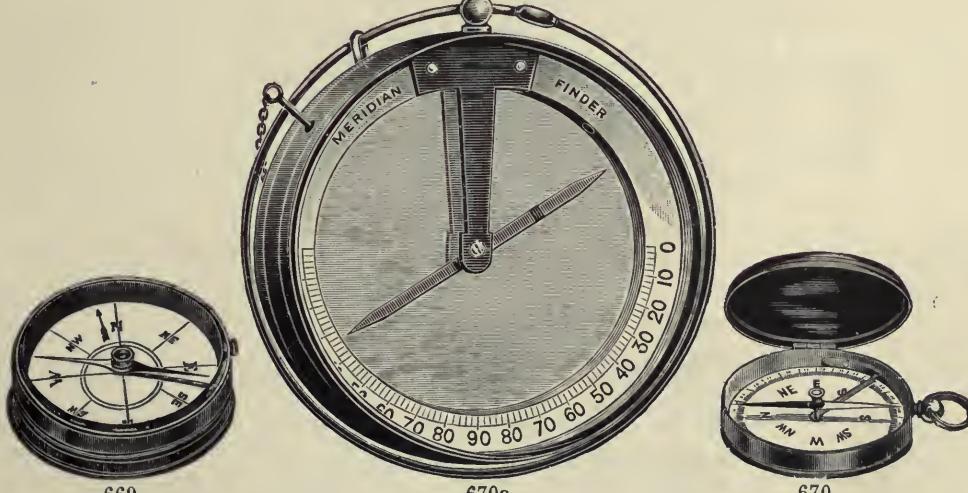
667-668

667 Combustion Tubes, German porcelain. Bore, $\frac{5}{8}$ -in. diameter.
Length 18 20 22 24 in.
Each \$1.00 1.20 1.35 1.75

668 Combustion Tubes, Royal Berlin porcelain. Glazed inside and outside, 24 in. long.
Bore $\frac{5}{8}$ $\frac{3}{4}$ $1\frac{1}{8}$ $1\frac{3}{8}$ $1\frac{3}{4}$ in.
Each \$4.00 5.00 6.00 7.00 8.00

668a Combustion Tubes, Electroquartz. Not transparent.
On all of these the edges are fused smooth.

Length.	Inner Diameter.	Price each.
18-inch	$\frac{5}{8}$ -inch	\$2.75
18-inch	$\frac{3}{4}$ -inch	3.25
24-inch	$\frac{5}{8}$ -inch	3.50
24-inch	$\frac{3}{4}$ -inch	4.50
24-inch	$\frac{7}{8}$ -inch	5.00
30-inch	$\frac{3}{4}$ -inch	5.50
30-inch	$\frac{5}{8}$ -inch	6.00



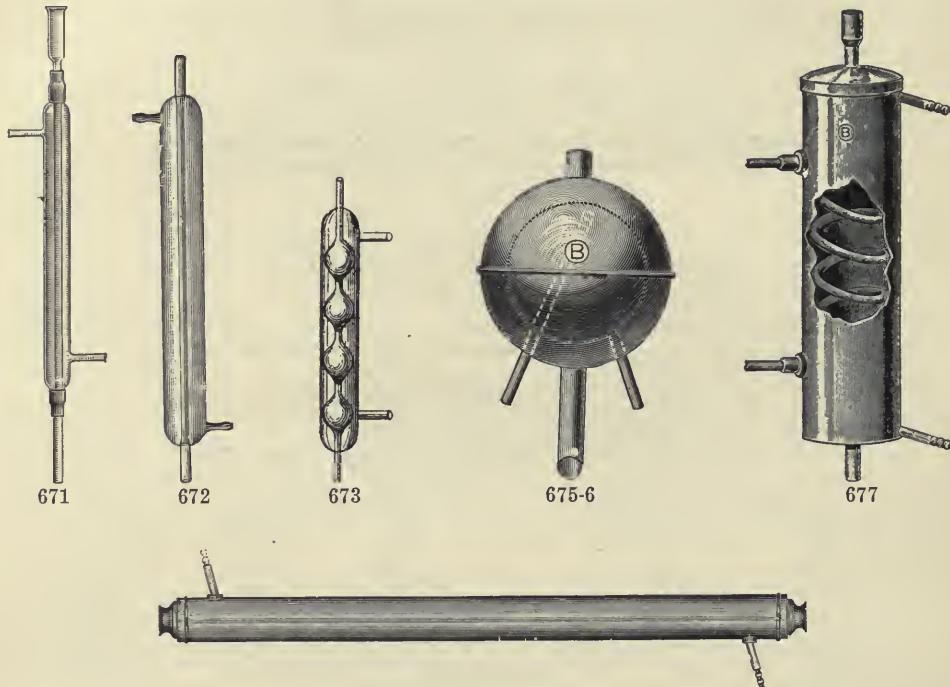
669

670a

670

669 Compass, Pocket. Brass case, with cover, metal dial, stop to needle, $1\frac{3}{4}$ -in. diameter	\$1.00
670 Compass, Pocket. Watch pattern, nickel-plated, hunting case, agate center, improved stop, $1\frac{3}{4}$ -in. diameter	2.00
670a Compass, Miners' or Dipping Needle, 3 inches in velvet lined case	12.00

CONDENSERS



CORKS

No.

681 Corks, tapering, regular length, XX quality.

No.	1	2	3	4	5	6	7	8
Dia. small end	1/4	5-16	3/8	7-16	1/2	9-16	5/8	11-16 in.
Gross	\$0.20	.20	.25	.30	.35	.40	.50	.60
No.	9	10	11	12	14	16	18	20
Dia. small end	3/4	3/4	13-16	7/8	1	1 1/8	1 1/4	1 1/8
Gross	\$0.75	.90	1.00	1.20	1.40	1.80	2.20	2.60
							3.40	4.00
								4.30

682 Corks, flat, for wide mouth bottles, superior XX quality.

Dia. large end	1	1 1/8	1 1/4	1 3/8	1 1/2	1 5/8	1 3/4 in.
Gross	\$0.80	1.00	1.40	1.60	1.80	2.00	2.40
Dia. large end	1 1/8	2	2 1/4	2 1/2	2 3/4	3	3 1/2 in.
Gross	\$3.00	3.50	4.50	6.00	8.00	11.00	14.00
Doz.	.30	.35	.40	.60	.80	1.00	1.25



683-683a.



684



684a



686

683 Cork Borers; hard brass, well finished.

Sets of	3	6	9	12	15 pieces
Each	\$0.60	1.00	1.75	2.25	3.00

683a Cork Borers, of hard drawn steel, nickel-plated, set of 6 pieces..... \$3.00

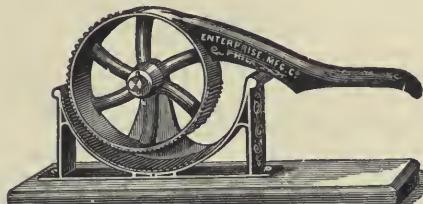
684 Cork Borer Sharpener Each 1.00

684a Cork Knives Each .20

685 Cork Plates, size 4 x 12 in., XX quality.

Thickness	1-16	1/8	3-16	1/4	5/8 in.
Each	\$0.15	.25	.35	.50	.70

686 Cork Press, lever model Each .35



687

687 Cork Press, rotary, for small and large corks..... Each \$1.00

688 Corkscrews, good quality Each .25

Black Lead Crucibles and Their Use

Many users of black lead crucibles do not fully appreciate the importance of keeping and handling their crucibles in a manner that will insure the greatest number of heats. Notwithstanding the fact that graphite will withstand a temperature almost beyond the limit of calculation, and, when made into a crucible, has the appearance of being anything but fragile, it is in the respect of usefulness a very delicate article, and many perfect crucibles are ruined through the neglect of the user, and the crucible gets the blame. Accidents with crucibles are both annoying and expensive, and in nearly all cases can be avoided by proper annealing.

The most common complaint which the dealer has to contend with is what is called scalping, and is invariably caused by carelessness in annealing. When the crucible comes from the kiln it contains less than one-fourth of one per cent. combined moisture. In this condition it is absolutely impossible to scalp it. But the minute it cools off, it begins to absorb moisture, and the amount depends upon the condition in which it is kept. Crucibles should be stored in as dry a place as possible.

Our crucibles are especially prepared with an outside coating which excludes the greater part of the moisture. This coating burns off when the crucible is annealed and in no way affects it, except from helping to keep out the moisture as above stated. The coating, however, does not keep out all the moisture, and it is necessary to anneal the crucible by heating it very gradually to a temperature of about two hundred and fifty degrees (250°) Fahrenheit to thoroughly dry it out. For instance with a No. 200 or No. 300 crucible, it should take at least ten hours to bring the crucible up to this temperature, if the crucible is cold to start with. If heated quickly, the moisture cannot escape fast enough and becomes steam, expands, and if it does not explode or scalp the crucible, it is liable to cause small cracks or fissures which will not show on the surface, but may, after the crucible has been used a few times, develop into what are called pin holes from which the molten metal will leak.

In some instances a crucible (without the special coating), that has been stored in a damp place, might develop pin holes even with the most careful annealing.

Every means should be used that will aid in keeping a crucible from absorbing moisture. For this reason our specially prepared crucibles reach the consumer in much better condition than the crucibles usually supplied by other dealers. Another thing which is most important, is when the annealing process has been properly completed, the crucible should be charged and put into the furnace at a temperature of about two hundred and fifty degrees (250°) Fahrenheit, or without allowing it to cool off any more than can be helped, until a heat has been taken off.

If the crucible after having been annealed is placed on a damp floor or ground and allowed to cool, the annealing counts for nothing. It is a mistake to think that after the crucible has been annealed it is impervious to moisture, for it is not, and if allowed to cool, will take up moisture just as readily as before.

Concerning the proper method of annealing, there can be no fixed rules, as conditions differ. Some of the largest users are equipped with special furnaces for this purpose, but the most general method is to anneal on the top of the furnace, which slowly drives out the greater part of the moisture. In any event, care should be taken that gases from the fuel do not strike the crucible while annealing. Fresh fuel or improper combustion produce more or less gas which moistens the sides of the crucible, an oxidizing condition develops, and when the temperature is sufficiently high, causes small cracks on the outside of the crucible, usually termed as alligator cracks. This sometimes occurs when crucibles placed on the top of the furnace to dry, are too near the opening, which may for some reason not be closely covered.

Fortunately, these troubles are not general and are as a rule confined to the small users. Large consumers of crucibles have educated themselves along these lines, and have annealing ovens or other proper methods for annealing, with the result that crucible troubles are eliminated.

Another thing which often shortens the life of a black lead crucible is the improper fit and bad management of tongs. The gripping portion of the tongs should fit the crucible so that when clamped to it the pressure is equally distributed. Tongs that fit badly or are handled carelessly gouge pieces out of the side and press the crucible out of shape, as a hot crucible is more or less plastic. Some damage of this nature is to be expected and only natural, because tongs for large crucibles are cumbersome and the work of operating them uncomfortable on account of the heat.

The new tilting furnaces obviate this latter difficulty as no tongs are required. The crucible remains stationary in the furnace which is another saving feature on account of the fact that it is not subject to sudden changes of temperature as is the case with the old style of Pit furnace where the crucible must be lifted out to pour.

See Steele-Harvey Tilting Furnaces.

CRUCIBLES AND RETORTS

Agents for Joseph Dixon Crucible Co.



THE WORLD FAMOUS GRAPHITE CRUCIBLE.

THE HIGHEST AVERAGE RESULTS are obtained by the use of DIXON'S CRUCIBLES.

For use in melting Cyanide Precipitates, Gold, Silver and precious metals, and are used by the various mints of the world.

They are adapted for use in the making of Low and High Steam Brass, Phosphorus, and Manganese Bronze, Copper Castings, Aluminum Mixtures, Crucible Steel, etc.

CRUCIBLES

No.

701 Crucibles, Black Lead or Plumbago, Dixon's.

Nos.	Holding Capacity Liquid Measure.	Height Outside.	Diam. at the Top Outside.	Diam. at the Bilge Outside.		
0.....	7-32 pt....	2 in....	1 $\frac{1}{2}$ in....	1 $\frac{5}{8}$ in....	Each \$0.25	
00.....	1-16 pt....	2 $\frac{3}{4}$ in....	1 $\frac{7}{8}$ in....	1 $\frac{7}{8}$ in....	.25	
000.....	$\frac{1}{2}$ pt....	2 $\frac{1}{4}$ in....	1 $\frac{1}{4}$ in....	2 $\frac{1}{8}$ in....	.25	
0000.....	$\frac{1}{4}$ pt....	3 in....	2 $\frac{3}{8}$ in....	2 $\frac{1}{2}$ in....	.25	
1.....	$\frac{1}{8}$ pt....	3 $\frac{5}{8}$ in....	3 $\frac{1}{4}$ in....	3 in....	.30	
2.....	$\frac{3}{4}$ pt....	4 $\frac{1}{2}$ in....	3 $\frac{3}{4}$ in....	3 $\frac{5}{8}$ in....	.35	
3.....	1 pt....	5 $\frac{1}{4}$ in....	4 $\frac{1}{4}$ in....	4 $\frac{1}{4}$ in....	.40	
4.....	1 $\frac{1}{2}$ pt....	5 $\frac{5}{8}$ in....	4 $\frac{7}{8}$ in....	4 $\frac{1}{2}$ in....	.45	
5.....	1 $\frac{1}{2}$ pt....	6 in....	4 $\frac{7}{8}$ in....	4 $\frac{3}{4}$ in....	.50	
6.....	1 qt....	6 $\frac{1}{2}$ in....	5 $\frac{1}{4}$ in....	5 $\frac{1}{8}$ in....	.60	
7.....	1 qt....	6 $\frac{3}{4}$ in....	5 $\frac{1}{4}$ in....	5 $\frac{1}{4}$ in....	.70	
8.....	1 qt....	7 $\frac{1}{2}$ in....	5 $\frac{3}{4}$ in....	5 $\frac{3}{8}$ in....	.75	
9.....	1 qt....	7 $\frac{5}{8}$ in....	5 $\frac{3}{8}$ in....	6 $\frac{1}{4}$ in....	.80	
10.....	1 qt....	1 pt....	8 in....	6 in....	.85	
12.....	2 qt....	pt....	8 in....	6 $\frac{3}{4}$ in....		
14.....	2 qt....	1 pt....	8 $\frac{1}{4}$ in....	6 $\frac{1}{4}$ in....		
16.....	2 qt....	1 pt....	8 $\frac{3}{4}$ in....	7 in....		
18.....	3 qt....	1 pt....	9 $\frac{1}{2}$ in....	7 $\frac{1}{2}$ in....		
20.....	1 gal....	pt....	10 $\frac{1}{4}$ in....	7 $\frac{7}{8}$ in....		
25.....	1 gal....	pt....	10 $\frac{1}{4}$ in....	8 in....		
30.....	1 gal....	1 qt....	1 pt....	11 $\frac{1}{4}$ in....		
35.....	1 gal....	2 qt....	1 pt....	11 $\frac{1}{4}$ in....		
40.....	2 gal....	pt....	12 $\frac{3}{8}$ in....	9 $\frac{1}{4}$ in....	10 $\frac{1}{4}$ in....	
45.....	2 gal....	1 qt....	pt....	13 in....	9 $\frac{3}{4}$ in....	10 $\frac{1}{2}$ in....
50.....	2 gal....	3 qt....	pt....	13 $\frac{3}{8}$ in....	10 $\frac{1}{2}$ in....	11 $\frac{3}{8}$ in....
60.....	3 gal....	pt....	14 in....	10 $\frac{1}{2}$ in....	11 $\frac{3}{8}$ in....	
70.....	3 gal....	1 qt....	pt....	14 $\frac{1}{8}$ in....	12 in....	
80.....	3 gal....	2 qt....	1 pt....	15 $\frac{1}{8}$ in....	11 $\frac{1}{4}$ in....	
90.....	4 gal....	pt....	15 $\frac{1}{8}$ in....	11 $\frac{1}{4}$ in....		
100.....	4 gal....	2 qt....	1 pt....	16 $\frac{1}{8}$ in....	11 $\frac{1}{8}$ in....	
125.....	4 gal....	3 qt....	1 pt....	16 $\frac{1}{2}$ in....	12 $\frac{1}{2}$ in....	
150.....	6 gal....	3 qt....	pt....	18 $\frac{3}{8}$ in....	13 in....	14 $\frac{5}{8}$ in....
200.....	9 gal....	3 qt....	1 pt....	20 $\frac{1}{4}$ in....	14 $\frac{1}{8}$ in....	16 $\frac{1}{2}$ in....
300.....	12 gal....	2 qt....	pt....	22 in....	16 $\frac{1}{4}$ in....	17 $\frac{1}{2}$ in....

702 Crucible Covers, Black Lead.

No.	1	2	3	4	5	6	7	8	10	12
Each	\$0.20	20	20	20	20	25	25	25	30	35

All sizes of covers above No. 12 per No. at $2\frac{1}{2}$ cts.

703 Crucible Stirrers, Black Lead. Length 14½ in..... Each \$0.60

Crucible Stirrers, Black Lead. Length 9 in., Mint size..... " .40

704 Crucible Stirrers, Fire Clay. Length 16 in..... " .20

STEELE-HARVEY CRUCIBLES AND RETORTS Quoted upon Application

CLAY CRUCIBLES



705

OUR OWN MANUFACTURE.

In considering the selection of a crucible the relative difference in, first cost of ours, and of the inferior grades, is of small moment to the loss frequently occasioned to more expensive equipment by the use of the cheaper article. A crucible running through onto the muffle bottom, which frequently occurs on the first fusion of the many cheap grades on the market results in loss of muffle efficiency, which is many times more valuable than the crucible itself, and also of flux, time and labor.

It is always a matter of regret to the manufacturer that the consumer is not as fully prepared to exercise the same care of his goods as he is himself. All appreciate the impossibility of this, as, knowing the details of construction which he is many times compelled to withhold, he is naturally sensitive to the importance of following certain rules to obtain the maximum efficiency from his products, of which the consumer cannot be aware.

With these facts strongly in mind we cannot but feel it will be of interest to the many users of our clay goods if we give here such few suggestions as our space will permit, to the end that they receive a better return on the money they have invested and at the same time frequently relieve us of unjust criticism due to the lack of that intimate knowledge of our products which if appreciated would prevent the violation of, sometimes, the simplest of rules.

We recall to mind an illustration of this which happened only recently where one of the most prominent Western Assayers sent us a sample of a crucible with which he found serious fault, it showing a straight crack from top to bottom, through which the slag had run and, to quote from his letter, "was in the fire but 20 minutes." Knowing of the strain which comes on a crucible exactly where this crack appeared, in packing and transporting, it was at once apparent the crucible was cracked before being put into the muffle, though of course not visible to the eye. If the operator had taken the simple precaution to tap the crucible with a pencil before weighing in the charge he

would have noticed the absence of the bell-like ring given by the perfect crucible, and discarded it, completing the assay in another crucible without annoyance, sparing us the criticism we in no sense deserved, as a good crucible is necessarily fragile and will sometimes break in spite of the precautions we take to guard against it.

The most frequent cause of poor service is the presence of moisture. Crucibles are particularly subject to absorption, and by actual experiment in our laboratory we have found from 20 per cent. to 40 per cent. is added to the life of crucibles by having them perfectly annealed over those kept in a damp, or even cold, place immediately prior to their use.

Invariably the assayer studies the ores of his district with a view to the selection of a flux that makes a perfectly fluid slag. Many fail to consider, however, that there may be present some ingredient that attacks the crucible as readily as it does the ore, greatly decreasing its life when some simple change in the mixture will answer equally as well on the ore and have little or no effect on the crucible.

We have been manufacturing 35 years, and during that time have constantly aimed to perfect our clay goods to the smallest detail. That we have in a measure succeeded is attested by the awarding to us of gold medals over all competitors at all of the great Expositions, and the constantly increasing demand from the trade.

As it is naturally impossible for us to make crucibles for the different conditions present in the many localities in which they are used, we suggest, if you have any difficulties in getting the service from them that you may reasonably expect, you at once advise us and let us make an investigation of your conditions, before you condemn.

We know they are the best grade of Metallurgical clay goods manufactured in the world, and if you are not getting the service it is due to some local condition which we will take pleasure in assisting you to correct. In a recent International competition test, our crucibles, in barrel lots, stood an average of twenty-seven fusions per crucible. Our nearest competitor, a foreign manufacturer, stood an average of seventeen. Other domestic makes showed a considerably less number.

We have full data of the experiments, formulæ, and methods of the past 35 years, and thorough knowledge, derived by long experience, so necessary in the manufacture of good crucibles.

Examine your goods. None genuine unless stamped, "Denver F. C. Co." They have many imitators, but no equals. Specify Denver Fire Clay Co. and get products of a house with a record who stand back of their goods.

705 Crucibles, Clay, our own manufacture.

These crucibles are made in both hard and soft burn.

Capacity	5	10	12	15	20	30	35	40 grm.
Height	2 $\frac{1}{2}$	3	3 $\frac{1}{4}$	3 $\frac{1}{2}$	3 $\frac{3}{4}$	3 $\frac{7}{8}$	4 $\frac{3}{4}$	5 $\frac{5}{8}$ in.
Dia. at top	2 $\frac{1}{2}$	2 $\frac{5}{8}$	2 $\frac{3}{4}$	2 $\frac{7}{8}$	3	3 $\frac{1}{2}$	3 $\frac{1}{4}$	3 $\frac{3}{8}$ in.
Per 100	\$2.50	3.00	3.00	3.00	4.00	6.00	6.00	8.00

706 Covers for above. Per 100 \$2.25 2.25 2.25 2.25 3.50 4.00 4.00 5.00

707 Crucibles, Clay, our own manufacture, tall, narrow form; superior for gas or gasoline furnaces.

No	6 or D	8	9
Height	4	5	5 $\frac{1}{4}$ in.
Dia. at top	2 $\frac{1}{4}$	2 $\frac{1}{2}$	3 in.
Per 100	\$3.50	7.00	8.00

708 Covers for above. Per 100 2.25 2.25 3.50

709 Crucibles, Clay, high form, our own manufacture, for gasoline or open furnace work.

No.	D or 6	E	F	G	I	J	K	L
Height	4	4½	5	5½	6	6½	7¼	8 in.
Dia. at top	2¼	3	3½	3¾	4	4¾	4½	5¼ in.
Per 100	\$3.50	5.50	6.00	8.00	10.00	12.00	13.50	24.00

710 Covers for above. Per 100 2.25 3.50 4.00 5.00 5.50 6.00 8.75 8.75

Table giving size of Crucible, number to the barrel and gross weight.

SIZE	No. per Barrel	Gross Weight per Barrel
5 Grammes	900	265
10 "	550	240
12 "	450	225
15 "	400	220
20 "	350	225
30 "	300	265
35 "	275	275
E	350	290
F	300	270
G or 40 Grammes	200	260
I	150	245
J	100	245
K	75	220
L	50	190
No. 6 or D	500	240
No. 8	300	290
No. 9	300	290

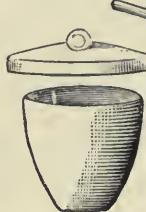
Crucibles in less than barrel lots 25c to 50c per hundred higher.



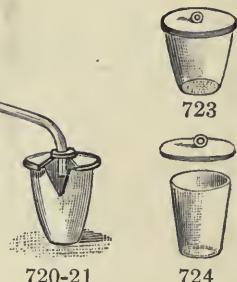
715



716



718



723

724

No.

715 Crucibles, Hessian Sand, triangular, in nests.

No. in Nest	3	5
Height of largest	4	4½ in.
Width on top	3	3¾ in.
Nest	\$0.10	.15

716 Crucibles, Royal Berlin Porcelain, without covers, glazed inside and outside.

No.	000	00	0	1	2	3	4	5
Dia.	1	1¼	1½	1¾	2	2½	3	3½ in.
Capacity	¼	½	⅓	1	1¼	3½	6	10 oz.
Each	\$0.09	.12	.20	.25	.30	.40	.50	.60

717 Crucible Covers for above .03 .03 .04 .05 .05 .08 .08 .10

Note:—Upon request of many of our customers we also keep in stock a Royal Berlin Crucible of a size between the 000 and 00, similar in dimensions to Royal Meissen No. 8. Price \$0.10
In ordering, please specify R. B. No. 8.

718 Crucibles, Royal Meissen Porcelain, without covers, glazed inside and outside.

No.	1	2	3	4	5	6	7	8	9	10	11
Dia.	3¼	2¾	2½	2¼	1¾	1½	1¾	1¼	1	¾	½ in.
Capacity	6	4½	3½	2	1½	1¼	1	½	¼	⅛	1-16 oz.
Each	\$0.45	.30	.25	.20	.17	.15	.14	.13	.12	.10	.09

719 Crucible Covers for above .15 .12 .05 .05 .05 .05 .03 .03 .03 .03 .03

719a Crucibles, of Berlin Porcelain, Royal Berlin shape, glazed, with covers.

No.	00	0	1	2	3
Capacity	13	15	25	45	90 cc.
Each	\$0.15	.18	.20	.25	.30

720 Crucibles, Unglazed Porcelain, Rose's, with perforated cover and tube.

Capacity	½	1	2 oz.
Each	\$0.50	.60	.90

721 Crucible Tubes and Covers only .35 .40 .70

722 Crucibles, Unglazed Porcelain, lipped with cover.

Capacity	125	250	500 cc.
Each	\$0.40	.50	.70

723 Crucibles, Royal Meissen Porcelain, Gooch's, with perforated bottom and cover; Meissen form

\$0.40

724 Crucibles, Royal Meissen Porcelain, Caldwell's, with cover and small rim instead of bottom to hold perforated disk; conical form

.50



No.

725 Crucibles, Pure Solid Nickel, for alkaline fusions.

Capacity	20	30	75	100	250	450 cc.
Dia.	3½	4	5	6	8	10 cm.
Each	\$0.40	.50	.60	.70	1.00	1.50

726 Crucible Covers for above .20 .25 .30 .35 .50 .75

727 Crucibles, Pure Silver, with covers. Same shape as platinum crucibles.

Capacity	20	30	50	75	100	150	200 cc.
Approx. Wt.	45	60	80	110	150	180	200 grms.
Per gramme							\$0.10

728 Crucibles, Light Spun Iron, with cover.

Capacity	½	1	2	4	8 oz.
Height	1¼	1½	2	2¾	3 in.
Dia.	1½	2⅓	2½	3⅓	3¾ in.
Each	\$0.25	.30	.40	.50	.75

728a Crucibles, Spun Copper, with cover.

Capacity	50	100	250	cc.
Dia.	2	2¾	3¾ in.	
Height	1½	1¾	2¾ in.	
Each	\$0.60	.80	1.00	

729 Crucibles, Cast Iron, with cover.

Capacity	pt.	qt.	½	1	2 gal.
Each	\$2.25	2.50	3.00	4.00	6.00

729a Crucibles, of pure fused Silica, not transparent.

Outside Measurements, Inches.

No.	Height	Diameter at top.	Price each.
C. 00	¾	1½	\$0.60
C. 0	1	1½	0.75
C. 1	1½	1½	0.85
C. 2	1 7-16	2¼	1.00
C. 3	1¾	2¾	1.20
C. 4	2	2	1.20

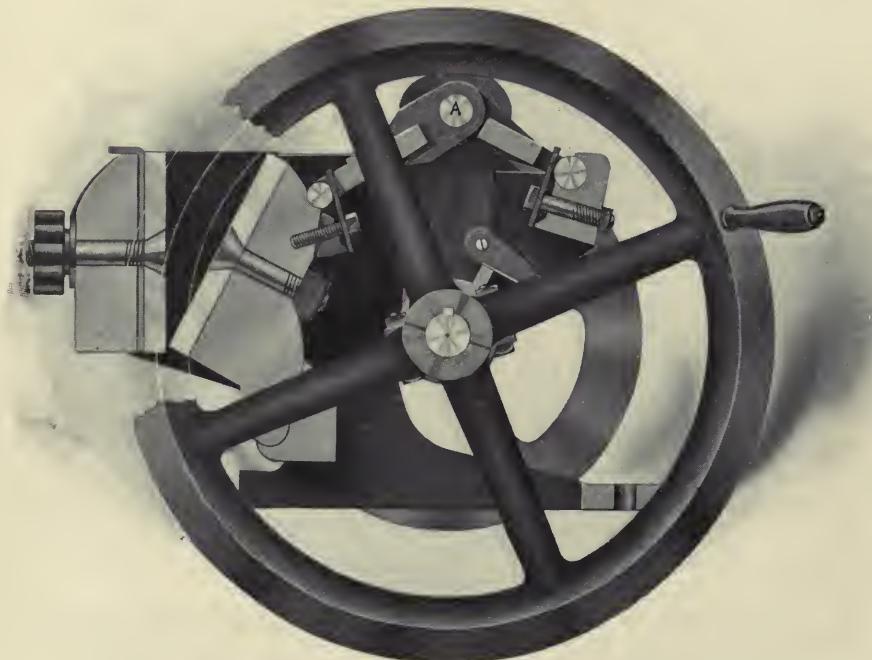
730 Crucible, Normal School, Skidmore's. For making oxygen from MnO₂; calcination of chalk, with recovery of the expelled CO₂; manufacture of soda from cryolite; preparation of ammonia; destructive distillation of coal, wood or other organic substances; capacity, 1½ oz.....
Capacity, 6 oz.

1.00
2.00

Crucibles of Platinum. See Platinum.

THE CASE LABORATORY CRUSHER

(Patented.)



731-731a

No.

731 **Crusher, Case.** The Case Laboratory Crusher (patented 1903) is designed to meet the constantly increasing demand for a strong power driven laboratory ore crusher. We unhesitatingly recommend it as being the strongest, fastest and best little crusher on the market today. The cuts above represent the combination hand and power crusher, which has the essential features of strength and speed, and at the same time requires the least power of any hand crusher on the market. This



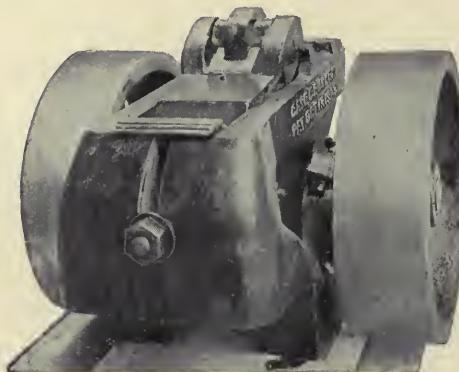
731

No. 731—Continued.

is furnished with a belt pulley 9 inches in diameter, with a $2\frac{3}{4}$ -inch face. A speed of 450 to 500 revolutions, driven by one H. P., is recommended for general use. Under these circumstances the crusher has a capacity of from 50 lbs. per hour to 100 lbs. per hour, depending upon the nature of the ore to be crushed. The jaw opening is $2\frac{1}{4}$ by 3 inches. All parts are made in exact duplicate, and consequently replacements can be had at a minimum expense. The lower cut shows the Case Crusher opened to clean, which is easily and quickly accomplished. It is only necessary to give two or three turns of the hand wheel at the front end of the frame, which allows the front jaw plate and adjustment shims to be lifted out. The rear jaw and plate can then be raised and swung back, as shown. This cleaning device is quickly and easily operated, and does not weaken the crusher frame or leave any loose parts to rattle and wear. The adjustment for fine or coarse crushing is made by use of special patented shims, which are inserted between the front jaw plate and the frame. This adjustment affords a variation of from $\frac{1}{4}$ -inch to 20 mesh, is quickly changed, perfectly substantial, and does not alter the relative position of front and back jaw plates, as it does with crushers having a rear adjustment. The motion of the movable jaw is such as to give it the very best possible feed and still not cake on soft material. The rear jaw plate is held by one taper head bolt in the center so that when the lower end becomes worn it can be reversed. The front plate is also reversible. Weight, 130 pounds.

Price, Hand only	Net \$30.00
Price, Power	" 32.00

Hand only, Code Word, "Casml." Hand and Power Code Word, "Caspsml."



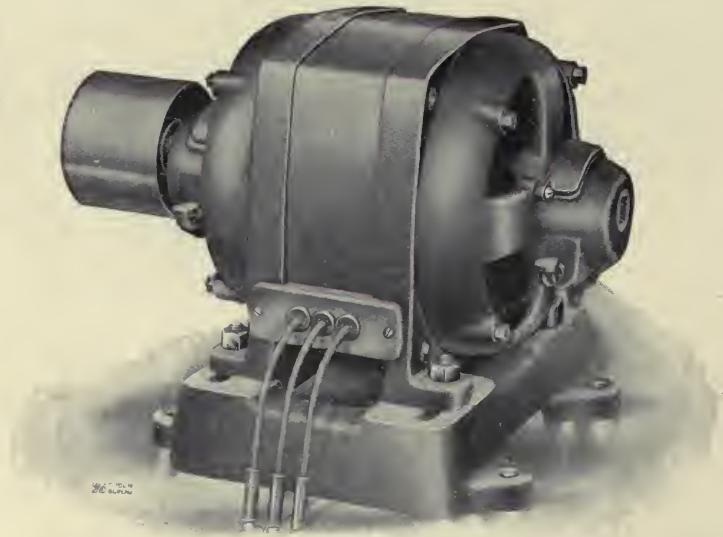
731a

Power only, Code Word, "Cakit." **Light and Loose Pulleys, Code Word, "Calue."**

731a Crusher, Case. Large size, for power only. This is the same as our No. 731, except for size, and is especially suited to mills, smelters, samplers and others having large samples to crush. Jaws, 4½ inches wide; opening, 3 x 4½ inches; capacity, 200 to 300 lbs. per hour. The pulley is 14 inches with a 4½-inch face. Floor space required, 21 in. by 21 in. Shipping weight, 350 lbs.

Price	Net \$80.00
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Price, with tight and loose pulleys.....	" 90.00
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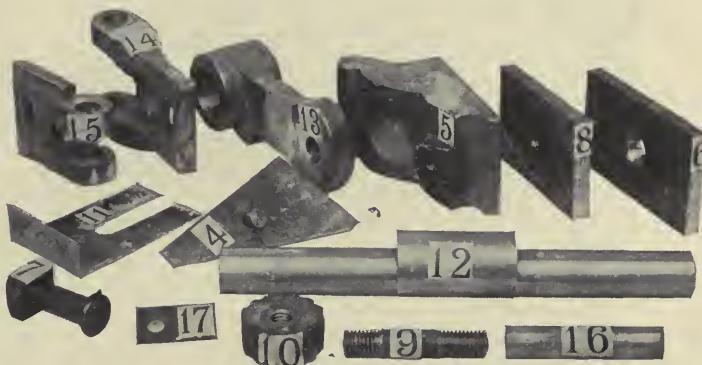
ELECTRIC MOTOR

We are prepared to furnish upon application, quotations on gasoline engines or electric motors (of standard makes) to drive Case Crushers and other laboratory machinery.

In writing state the machinery you wish to drive. In the case of electric motors, state whether it is for direct or alternating current, the voltage, cycle, and phase of the current.

Shipment will be made from Denver stock.

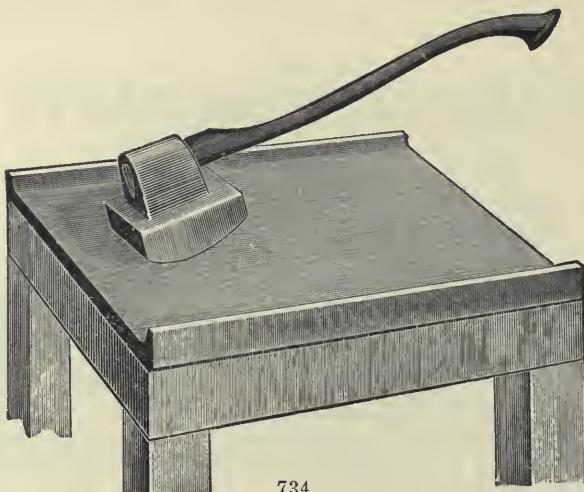
CASE CRUSHER PARTS



731b

Small Size	CASE CRUSHER PARTS	Large Size
X 1	\$12.00..... Frame (bare)	\$
A 2	.50..... Cap for Shaft	B 2 .50
A 3	.10..... Bolt for Shaft Journal	B 3 .10
X 4	.75..... Cheek Plates (pair) with Bolts	B 4 1.25
X 5	2.00..... Movable Jaw	B 5 3.00
X 6	.75.. Mild Steel Plate for Movable Jaw, with Bolt and Nut ..	B 6 .60 1.00
X 8	.75..... Mild Steel Stationary Jaw Plate with Stud	B 8 .60 1.00
A 10	.25..... Hand Grip Nut	
A 11	.25..... Shim to regulate size of product	B 11 .30
A 12	4.00..... Steel Crank Shaft	B 12S 6.00
	..... Steel Crank Shaft for Loose Pulley	B 12L 7.00
X 13	1.50..... Pitman	B 13 2.50
A 14	.75..... Front (long) Toggle	B 14 1.50
A 15	.75..... Back (short) Toggle	B 15 1.50
A 16	.25..... Toggle Pin	B 16 .40
A 17	.25..... Spring for Toggle Socket	B 17 .40
A 18	.10..... Cap Screw for 17	B 18 .10
A 19	.10..... Bolt for 17	B 19 .10
A 20	3.00..... Hand or Fly Wheel	
	..... Pulley Fly Wheel	B 21 7.00
A 21	4.00..... Pulley Wheel	
	..... Loose Pulley	B 21L 6.00

The parts with the "X" prefixed are different for the different designs. In ordering these parts, to avoid errors, state the letter designating the style, viz., A, or D, etc.



734

No.
734 Crushers, Bucking Board and Muller, for quickly reducing ore to a fine powder, of iron 1 in. thick, planed smooth on grinding side, and having flange on two sides 1½ in. high. Supplied with either a round or flat faced muller.

Size	12x18	18x20	20x24	24x30	24x36	30x36
Wt. of Muller	15	15	20	25	25	35 lbs.
Each	\$8.00	12.00	15.00	18.00	19.00	25.00

Note:—Round mullers which take regular axe handle, are always supplied (except the 35-lb. muller with the 30x36 in., which is flat); flat mullers take pick handles—see illustrations below. Different weight mullers can be supplied at a proportionate difference in price. Handles included.

734a Crushers, of Hardest Chrome Steel. Plates are 18 x 24 inches and weight about 115 lbs. each. Rubbers are 8 x 7 inches and weigh about 30 lbs. each. Both the face of the plate and the face of the rubber are machined. Does not grind off into the sample. Used by the U. S. Steel corporation for crushing iron ore, and recommended by the Chemists' Committee in their "Uniform Methods." Plate and Rubber.....Net \$45.00



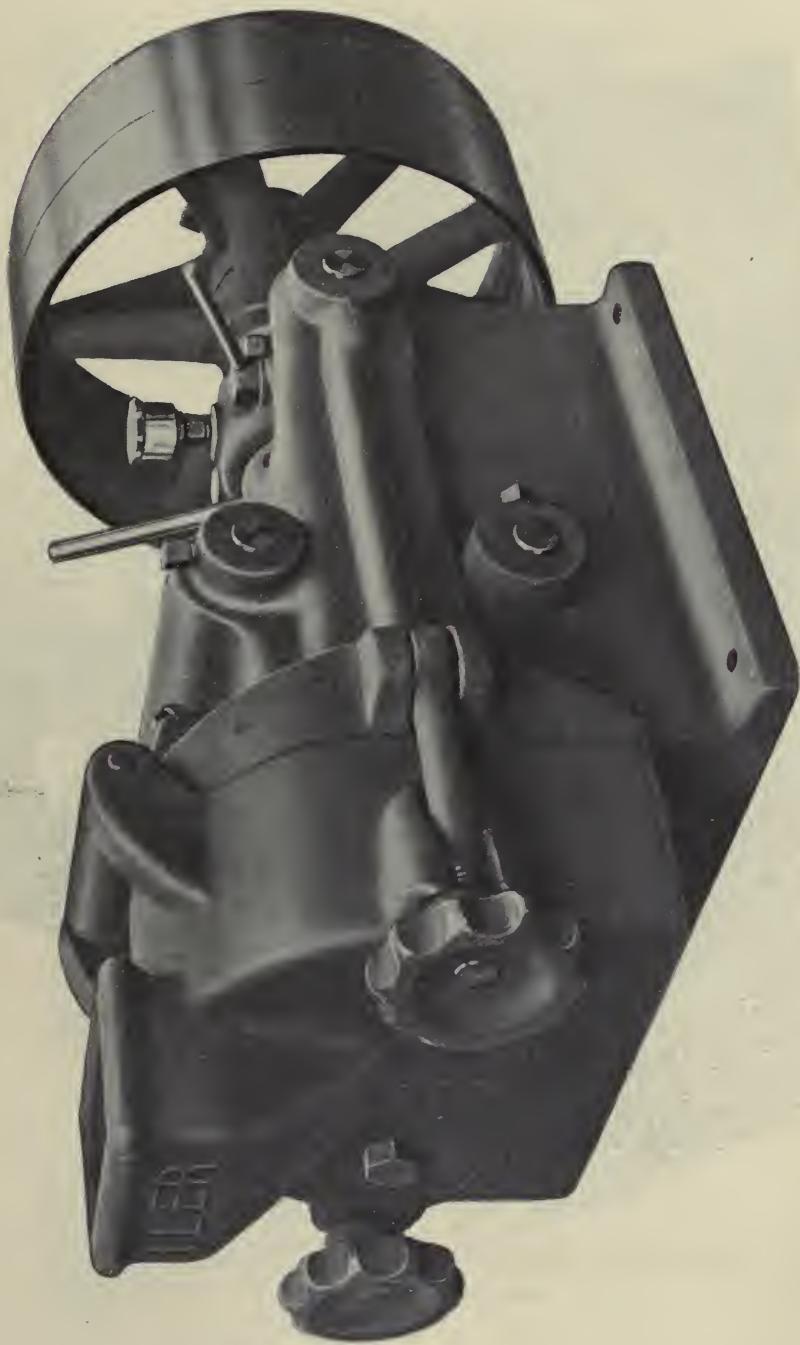
735a

735b

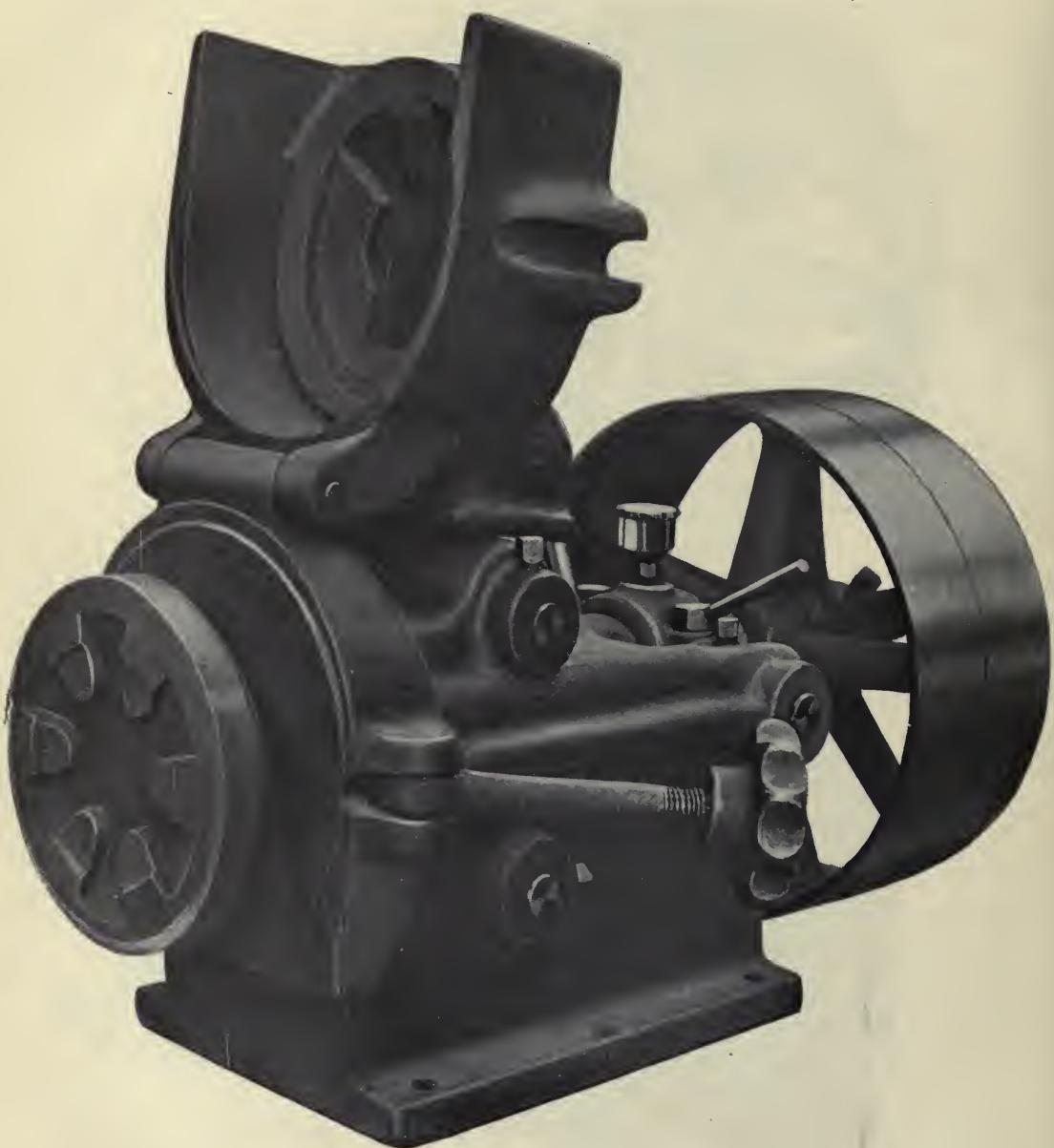
736

735 Crushers, Extra Mullers, small, medium and large, with best hickory handles. Per lb. \$0.12

736 Crushers, Weatherhead's Patent. Crusher and Pulverizer combined. Will reduce ores, pig iron, rock, clay, coal, etc., to fine powder in very short time. Readily cleaned; discharges material as soon as pulverized; working surfaces chilled. The cover is made so that it may be used as a small hand mortar, the end of the handles being rounded in the form of a pestle. One pound of pig iron at first operation can be reduced in 12 minutes to pass through sieves from No. 80 to 140. One pound glass in 7½ minutes 25.00

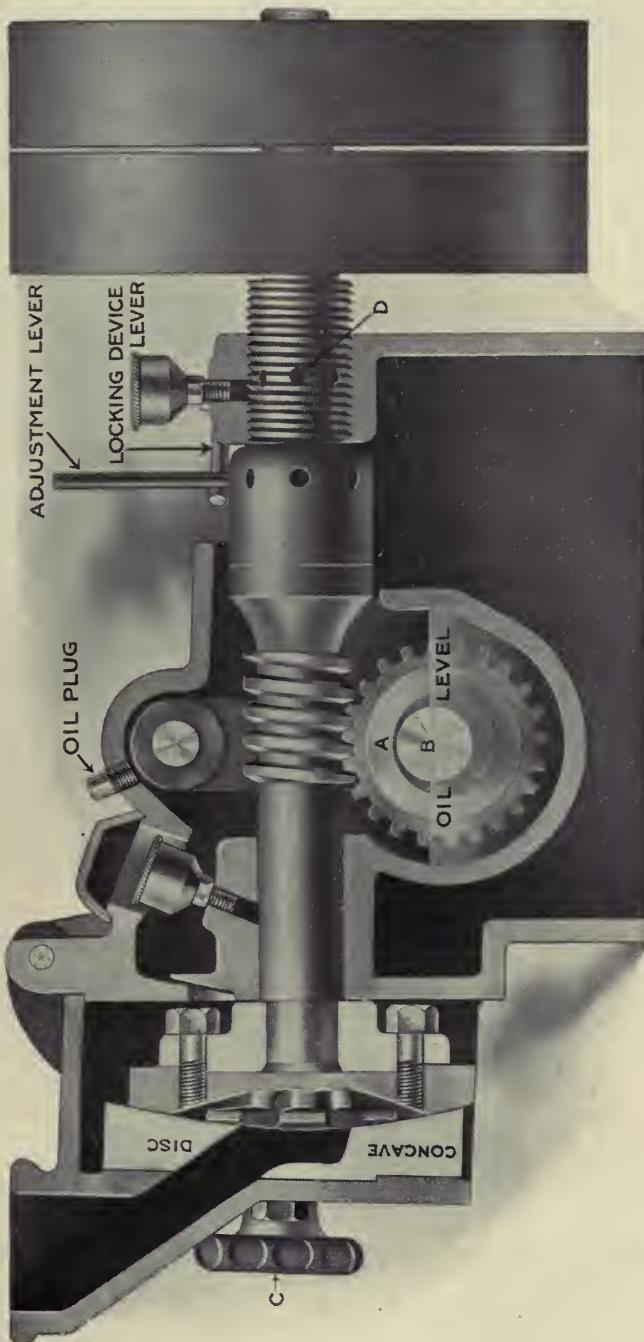


738
THE ILER IMPROVED DISC SAMPLE GRINDER.



THE ILER IMPROVED DISC SAMPLE GRINDER

Open for Cleaning



Sectional view of the Ille Improved Disc Sample Grinder illustrating method employed to give oscillating motion to the concave disc by means of an eccentric A on shaft B to which this disc is rigidly fixed with the hand screws C, oscillating from the point D, clearly shown in the two previous illustrations.

ILER'S DISC PULVERIZER

OR

ILER'S DISC SAMPLE GRINDER

Patented.

POWER ONLY

This machine has been constructed on the very latest mechanical principles, and has the combined good points of all the Disc Pulverizers on the market at this time, and many new thoroughly mechanical features; therefore, Assayers and Chemists who realize the importance of having a properly ground sample with no possibility of salting will undoubtedly decide on the Iler.

It is the most easily cleaned, and has the oscillating motion to the Discs. The Discs are made convex and concave so as to give the best possible wearing surface. This machine is constructed on such thoroughly mechanical principles as to practically do away with the gearing, but to give this oscillating motion which is, of course, very necessary to prevent the grinding surface on the Disc from becoming concentrically grooved. An ordinary 8 oz. sample can be ground to the finest of 100 mesh in less than one minute, and the machine can be instantaneously adjusted to grind to any degree of fineness while running, its adjustment being effected by means of a small lever with a lever locking device; for instance, one part of a sample could be ground to 50 mesh, part to 100 mesh and part to 200 mesh while the machine is in motion. On account of having the Discs concave and convex we use a smaller Disc and have greater grinding surface, and consequently this small machine does more and better work in less time than a larger machine.

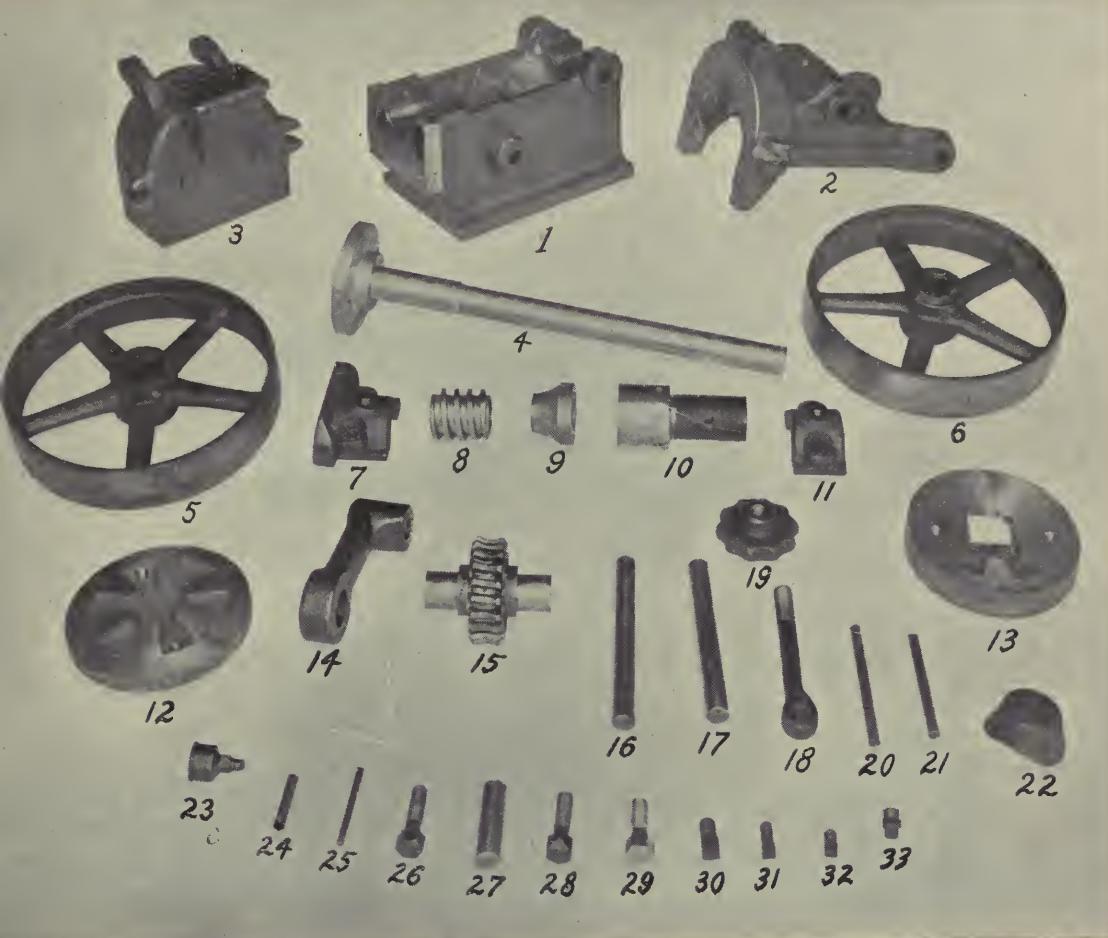
It is absolutely dust proof, consequently there is no loss of material and the Discs wear to place. The Discs are made of a very hard gray chilled cast iron and may be replaced at a much lower cost than any Discs for Pulverizing on the market.

Small Size.**Code Word, "Iler."**

Diameter of Discs, 6 inches.	Speed, 350 to 450 revolutions per minute.	
Net weight, 130 lbs.	Shipping weight, 140 lbs.	
Shipping weight, 140 lbs.	Total length, 24 inches.	
Total height, 10½ inches.	Diameter of pulleys, 10 inches.	
Face of pulleys, 2¼ inches.	Requires one-half horse power.	
Total width, 11 inches.	Machine complete.....	\$80.00
Extra Discs, per set.....		5.00

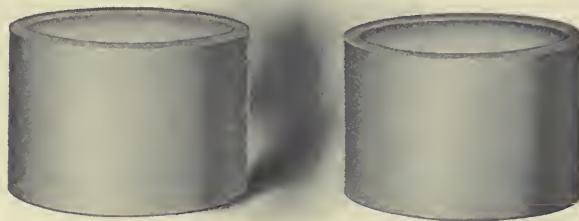
Large Size.**Code Word, "Iler-nine."**

Net Weight	300 lbs.
Diameter of Disc	9 "
Face of pulleys	2½"
Diameter of pulleys	14 "
Horse Power .....	.2 H. P.
Shipping weight	330 lbs.
Length over all	28½"
Height over all	14½"
Width over all	14½"
Complete Machine	\$135.00
Extra Discs, per set.....	9.40



PRICE LIST OF ILER DISC PULVERIZER PARTS.

	Small or 6" Mach.	Large or 9" Mach.	Small or 6" Mach.	Large or 9" Mach.
1. Main Frame	\$8.65	\$16.20	20. Hopper Hinge Pin	\$0.45 \$0.85
2. Oscillator	8.15	15.30	21. Adjusting Pin .....	.40 .75
3. Hopper	7.70	14.35	22. Oil Cup Cover .....	.65 1.25
4. Main Shaft	9.55	17.90	23. Compression Oil Cup ..	.95 1.80
5. Tight Pulley	3.20	6.00	Two pieces, 50c each.	
6. Loose Pulley	3.00	5.60	24. Eye Bolt Pin .....	.40 .75
7. Front Cap	2.55	4.80	Two pieces, 20c each.	
8. Worm	5.35	10.00	25. Clamping Pin .....	.25 .45
9. Thrust Collar	1.60	3.00	26. Main and Back Cap Bolts	.45 .85
10. Adjustable Bearing	3.00	5.60	Three pieces, 15c each.	
11. Back Cap	2.55	4.80	27. Pivot Pin	1.50 2.80
12. Revolving Disc	2.50	4.70	Two pieces, 75c each.	
13. Stationary Disc	2.50	4.70	28. Back Clamping Bolt ...	.40 .75
14. Connecting Rod	3.00	5.60	29. Disc Bolts .....	.55 1.00
Two pieces, \$1.50 each.			Four pieces, 15c each.	
15. Worm Gear	5.35	10.00	30. Tight Pulley Set Screw	.25 .45
16. Worm Gear Shaft	1.15	2.15	31. Set Screws for No. 1 ...	.55 1.00
17. Oscillating Shaft	1.15	2.15	Four pieces, 15c each.	
18. Eye Bolts	1.70	3.20	32. Set Screws for No. 2 ..	.40 .75
Two pieces, 85c each.			Two pieces, 20c each.	
19. Knob Nut	1.15	2.15	33. Oil Plug for No. 2....	.25 .45
Two pieces, 60c each.				

"CASEITE"**CUPELS**

739

Code Word, "Caseite."**MANUFACTURED CUPELS.**

We have had a great many inquiries in the past for a ready made Cupel that will fill all the exacting requirements as well as those locally made from first class boneash, and at the same time be sufficiently strong to stand long transportation without damage.

After a great deal of experimental work with almost an endless variety of mixtures we are at last prepared to meet this demand in the way we should like to, that is to say, with our complete recommendation and approval.

The Caseite Cupel is made of a composition each of the ingredients of which is a perfect absorbent of lead oxide. This material makes a Cupel, that when cold, is extremely hard, and will withstand great abuse, but when heated to approximately one half cupeling temperature becomes as soft and porous as the most perfect boneash Cupel.

We have had the most exhaustive tests made in our own laboratory in competition with our boneash Cupels as well as the ready made Cupels of other manufacturers, and are firmly of the opinion it is the superior of anything as yet coming within our notice, and fully equal to the best bone ash Cupel. We are prepared to supply in any quantity, put up in boxes of twelve, 100 and 500, packed carefully for shipment and beg to quote the following prices:

	Box of	1 Doz.	100	500
Size.....	1 1/4	\$0.60.....	\$4.00.....	\$3.75 per 100
"	1 1/2 .....	.75.....	5.00.....	4.50 " "
"	2	1.00.....	6.80.....	6.00 " "
"	2 1/2	1.35.....	8.00.....	7.20 " "

Special prices in lots of 1000 or more.

CUPELS

No.

741 **Cupels.** Our XX brand of cupels are made from the best bone ash and have all the proper absorbing qualities.

Absorbing	10	15	20	30	50	75	150 grammes.
Dia. on top	1	1 1/8	1 1/4	1 1/2	1 3/4	2	2 1/2 in.
Per doz.	\$0.25	.30	.35	.40	.45	.60	.75
Per 100	1.50	2.00	2.25	3.00	3.50	4.00	6.00

742 **Cupel Moulds, brass.** Finely finished.

Dia.	3/4	1	1 1/8	1 1/4	1 1/2	1 3/4	2	2 1/2 in.
Each	\$1.75	1.75	2.00	2.25	2.50	3.00	4.00	6.00

743 **Cupel Moulds, iron.**

Dia.	3/4	1	1 1/8	1 1/4	1 1/2	1 3/4	2	2 1/2 in.
Each	\$1.25	1.25	1.35	1.50	1.75	2.00	2.25	3.00

ILER'S IMPROVED CUPEL MACHINES

(Pedal) (Patented)



744

No. 744. This machine is undoubtedly the most efficient cupel machine on the market, and with the improvements recently made it has a capacity of 500 cupels per hour, this being accomplished by the rapidity of adjustment of the degree of compression, thus making cupels of uniform density and size.

It is the most easily operated machine on the market. As you will note from the illustration it is operated by foot power, thus leaving both hands free with which to



742-3

work. You will note that the density and thickness of the cupels are regulated by one small set screw on the pedal; therefore, those who desire uniform cupels and the most satisfactory machine will undoubtedly decide on an Iler.

The bone ash properly moistened is placed at one side on the top of a small table, as shown in the illustration and the mould is filled by using one hand and the finished product is taken off by the other, thus making the machine very rapid; in fact, a man may turn out with this machine more cupels than with any other machine on the market with the least exertion.

This machine makes cupels with perfect edges, and a homogeneous cupel is always obtained; therefore the advantage this machine has over others is that this is all accomplished with two movements of the foot. All dies are of brass and the changes of dies to make the different styles and sizes of cupels is extremely simple and takes less than one minute. These machines are in service in the largest smelters and assay offices in the world, and are giving universal satisfaction.

The Iler Cupel machine is made in two sizes, one making $1\frac{1}{4}$ and $1\frac{1}{2}$ in. cupels and the other making $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$ and 2 inch cupels. The simplicity of construction of the Iler Cupel machine makes it possible for us to sell them at a very reasonable figure, as follows:

Machine to make $1\frac{1}{4}$ and $1\frac{1}{2}$ inch Cupels \$25.00

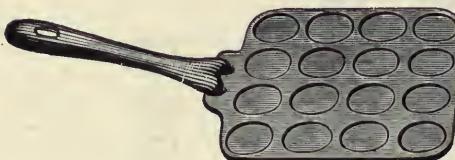
Machine to make $1\frac{1}{4}$, $1\frac{1}{2}$, $1\frac{3}{4}$ and 2 inch Cupels 35.00

Shipping weight, 40 lbs. per machine.

The above prices apply on machines packed and ready for shipment
f. o. b. Denver, Colo., or Salt Lake City, Utah.

Code Word, small, "Ilcus."

Code Word, large, "Icul."



749



750

No.

747 Cupel Rake, iron. 24 in. long..... \$0.50

748 Cupel Shovel, iron. 24 in. long50

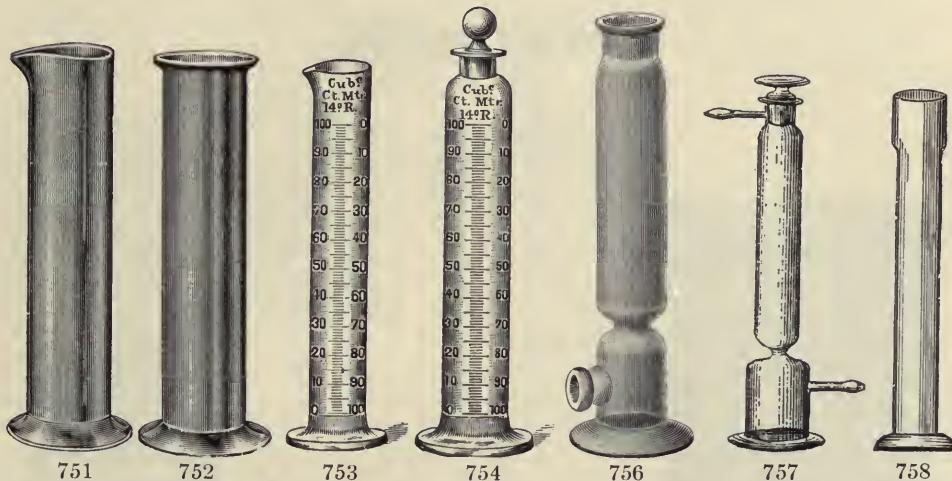
Cupel Tongs. See Tongs No. 1530.

749 Cupel Trays. Holding 16 Cupels, with detachable handle, all iron75

750 Cups, Miners, of agateware.

Capacity: 2 pt., 50 cts. 3 pt., 75 cts.

CYLINDERS



No.

751 Cylinders, glass, with lip.

Height	5	6	7	8	10	12	12	15	15	15	18	18 in.
Dia.	1	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2	2	1 1/2	2	2 1/2	2	3 in.
Each	\$0.15	.20	.25	.30	.35	.40	.45	.50	.55	.70	.80	1.00

752 Cylinders, glass, with ringneck.

Height	5	6	7	8	10	12	12	15	15	15	18	18 in.
Dia.	1	1 1/4	1 1/4	1 1/2	1 1/2	1 1/2	2	1 1/2	2	2 1/2	2	3 in.
Each	\$0.15	.20	.25	.30	.35	.40	.45	.50	.55	.70	.80	1.00

753 Cylinders, glass, with lip, double graduation in CC., reading up and down.

Capacity	10	25	50	100	200	250	300	500	1000	2000	cc.
Each	\$0.30	.40	.50	.60	.80	.90	1.00	1.20	2.20	3.50	

754 Cylinders, glass, with ground-in stopper, double graduation in CC., reading up and down.

Capacity	10	25	50	100	200	250	300	500	1000	2000	cc.
Each	\$0.45	.60	.70	.80	1.00	1.20	1.30	1.65	2.40	4.00	

755 Cylinders, Nessler's, for ammonia test. Graduated, with even ground bottom.

Grad.	50	100	50 and 100	50, 100 and 150	cc.
Each	\$0.50	60	.70	.80	

755a Cylinders, Nessler's, for water analysis, tall form, 50 CC., with polished bottom, lipped, size 12 x 3/4-in. Each \$0.50

756 Cylinders, Chloride Calcium. Plain.

Height	8	12	16	20	24 in.
Each	\$0.50	.75	1.20	1.75	4.00

757 Cylinders, Drying, with perforated glass stopper.

Height	11	14 in.
Dia.	1 1/4	2 in.
Each	\$1.75	2.25

758 Cylinders, Mercury Jars, with enlarged top.

Height	12	16	18	20 in.
Each	\$0.40	.50	.60	.70

DEMIJOHNS



759



759a

No.

759 **Demijohns**, wickered. The 5-gallon size is oval and has two handles.

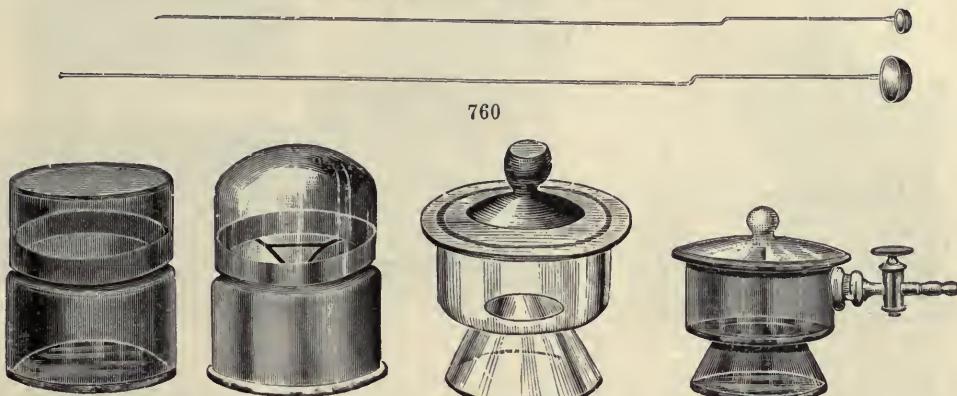
Capacity	1	2	3	5 gallons
Each	\$0.50	.75	1.00	1.50

759a **Demijohns**, "Skeleton," for laboratory work.

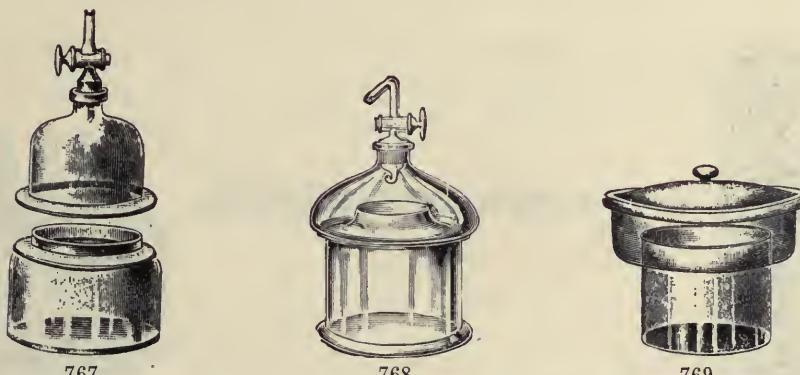
A new container of high merit. Bottles are of clear, light green glass, affording opportunity for minute and intelligent inspection of contents. The protection against breakage at the bottom is perfect, while the four upright canes or standards afford security for the sides and serve as substantial handles. For intelligent laboratory work this package has no equal.

Capacity	2	3	5 gallons
Each	\$1.00	1.25	1.75

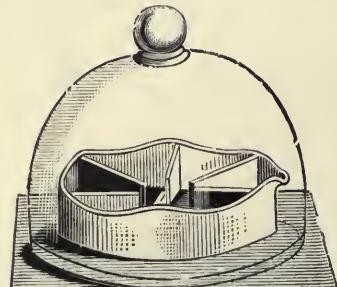
DESICCATORS



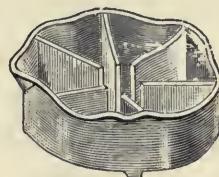
No.	762	763	764	766	
760	Deflagration or Combustion Spoons, of iron., $\frac{1}{2}$ or 1-in. cup		Each	\$0.15	
760a	Deflagration or Combustion Spoons, of brass, $\frac{1}{2}$ or 1-in. cup		Each	.20	
761	Desiccators, Atwater's. With triangle			1.75	
762	Desiccators, Fresenius'. Flat top			1.00	
763	Desiccators, Fresenius'. Round top, with brass triangle.....			1.25	
764	Desiccators, Scheibler's. With knob top, ground air tight.				
	Dia. 4 5 6 in.				
	Each \$0.60 .80 1.00				
765	Desiccators, Scheibler's. With porcelain plate, like No. 772.				
	Dia. 4 6 in.				
	Each \$1.40 2.00				
766	Desiccators, Scheibler's. With side tube and stopcock ground in. Inside dia. $5\frac{1}{2}$ in.				3.00



767	Desiccators, Fresenius'. With stopcock ground in top tubulature. Inside dia. 5 in.		\$3.00
768	Desiccators, Hempel's. Very perfect, from the fact that water vapor has a lower specific weight than air and therefore accumulates in the upper part of a desiccator, which is overcome by placing the drying substance in the lower part of the cover.		
	Size 4 x 4 6 x 5 in.		
	Each \$3.50 4.50		
769	Desiccators, Reinhardt's. This form possesses many advantages; the airtight cover fits inside the rim and therefore cannot slip off. The drying material is placed in the upper broad rim, so that all the other space is available for drying purposes. Drying space, 6x6 in.....		5.00



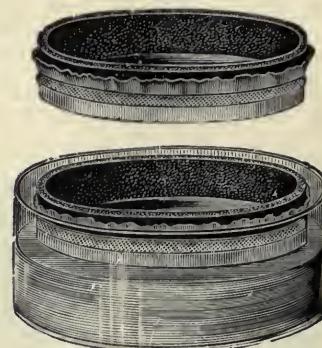
770



771



772



773

No.						
770	Desiccator , consisting of a porcelain acid dish and bell glass ground air tight to heavy glass plate.					
	Dia. of bell jar	6	8 in.			
	Each	\$2.25	3.00			
771	Desiccator Dishes , or acid dishes, of porcelain, with partitions.					
	Dia.	4 $\frac{3}{4}$	6 $\frac{1}{2}$ in.			
	Each	\$1.00	1.40			
772	Desiccator Plates , of porcelain.					
	Dia.	3 $\frac{3}{4}$	5 in.			
	Each	\$0.80	1.00			
773	Dialysers . Low form, complete.					
	Dia.	6	8 in.			
	Each	\$2.00	2.50			



774



776



777

774	Dialysers . Tall form, complete.								
	Capacity	qt.	$\frac{1}{2}$ gal.						
	Each	\$1.25	1.50						
775	Diamonds , for cutting glass; in handle								\$5.00
776	Diamonds , for writing on glass; in handle								3.00
777	Dies, Figures . Of steel, for stamping bullion, etc.								
	Face	1-16	$\frac{1}{8}$	3-16	$\frac{1}{4}$	5-16	$\frac{3}{8}$	7-16	$\frac{1}{2}$ in.
	Set	\$0.60	.70	.80	1.00	1.20	1.60	2.40	3.00



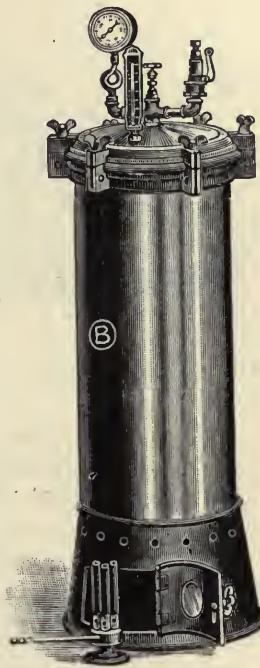
778a



778



780



780a

No.

777a Dies, Figures, of cast iron, for stamping wood, soft metals, etc.

Size $\frac{1}{2}$ in.	Set \$2.00
Size $\frac{3}{4}$ in.	Set 3.50

778 Dies, Letters. Of steel, for stamping bullion, etc. Hand cut, best quality.

Face 1-16 $\frac{1}{8}$ 3-16 $\frac{1}{4}$ 5-16 $\frac{3}{8}$ 7-16 $\frac{1}{2}$ in.	
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Set \$1.75	2.00	2.50	3.00	3.50	5.00	6.50	8.50
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778a Dies, Letters, of cast iron, for stamping wood, soft metals, etc.

Size $\frac{1}{2}$ in.	Set 6.00
Size $\frac{3}{4}$ in.	Set 10.00

779 Dies, Steel Stamp, i. e., letters or figures in one piece.

Size $\frac{1}{8}$ $\frac{1}{4}$ 5-16 $\frac{3}{8}$ $\frac{1}{2}$ in.	
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Quoted upon application.

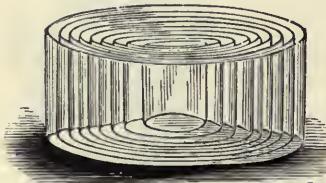
780 Dippers, Agateware, extra strong, with wooden handles, for quicksilver.

No. 210 small size, 4 $\frac{1}{4}$ x 3 in.	Each .60
No. 214 large size, 6 x 3 $\frac{1}{2}$ in.	Each .75

780a Digester or Autoclav, for sterilizing under steam pressure. The boiler is

made of extra heavy copper, tin-lined, is 24 inches deep and 11 inches in diameter, with a perforated rack inside. The lid is made of cast brass and nickel-plated. It is made with a ground joint, no washers being necessary to make it steam-tight; it is held in position by six screw clamps. The apparatus is tested and guaranteed to stand pressure of 50 pounds to the square inch, is provided with a pressure gauge, thermometer and safety valve; the latter is set at 30 pounds, but may be increased or decreased. There is a small pet valve which must be kept open until the steam escapes, thereby forcing all the air out of the boiler. The base is made of sheet iron and is 8 inches high; extreme height of the apparatus is 40 inches. Price, including three-tube burners Net 50.00

DISHES



781



782



783

No.
781**Dishes, Crystallizing, glass.** With flat bottom and straight sides.

Dia.	2 1/4	2 3/4	3 1/4	3 5/8	4	5	5 1/2	6 1/2	7 1/2	8 1/2	9 1/2
Each	\$0.10	.15	.18	.19	.20	.30	.35	.45	.50	.60	.75

782 **Dishes, Crystallizing, porcelain.** Glazed inside, with flat bottoms, straight side and with lip.

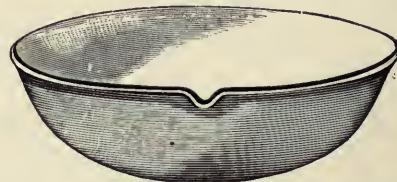
Dia.	6	8	10	11	12 1/2
Each	\$0.60	.80	1.20	1.50	2.00

783 **Dishes, Evaporating, glass, hemispherical.** With lip.

Dia.	2	2 1/2	3 1/4	4	4 3/4	5 3/4	6 1/2
Each	\$0.12	.15	.20	.25	.30	.40	.50



784



785

784 **Dishes, Evaporating, Royal Meissen Porcelain.** With lip.

No.	000	00	0	1	2	3	4
Dia.	16	14 1/2	13 1/2	12	11	10	9 in.
Capacity	2 1/4	1 3/4	1 1/4	1	3/4	1/2 gal	2 1/2 pts.
Each	\$6.50	5.50	4.00	3.00	2.00	1.75	1.40

No.	5	6	7	8	9	10	11
Dia.	7 1/2	6 1/2	5 1/2	5	4 1/2	3 1/2	2 1/2
Capacity	2	1	1/2 pt	6	4	2	1 oz.
Each	\$1.00	.80	.55	.40	.30	.20	.15

785 **Dishes, Evaporating, Royal Berlin Porcelain.** Glazed inside and outside, with lip.

No.	000	00	0	1	2	3	4	5
Dia.	2 1/4	2 3/4	3	3 1/4	3 1/2	3 3/4	4 1/4	4 3/4
Capacity	1	2	3	4	5	6	8	10
Each	\$0.15	.18	.20	.30	.35	.40	.45	.55
No.	6	7	8	9	10	11	12	13
Dia.	6	7	8 3/4	10 1/2	12 1/4	14	16	18
Capacity	1	2	3	5	7 pts.	1 1/2	2 1/2	gal.
Each	\$0.70	.90	1.20	1.75	2.75	3.50	8.00	



No.

786 Dishes, Evaporating, Royal Berlin Porcelain. With lip, shallow form.

No.	1	2	3	4	5	6	7
Dia.	2 3/4	3 1/4	3 1/2	4	4 3/4	5 1/2	6 in.
Capacity	1	2	4	6	8	12	20 oz.
Each	\$0.25	.30	.40	.50	.60	.75	1.00

787 Dishes, Evaporating, German Porcelain. Glazed inside with heavy rim.

No.	00	0	1	2	3	4	5	6	7	8	9
Dia.	16	14	12	11	10	9	8	7	6 1/2	6	5 1/2 in.
Capacity	3	2	1 gal.	3	2	1 1/2	1 qt.	24	20	16	12 oz.
Each	\$4.00	3.00	1.80	1.50	1.30	.90	.80	.70	.60	.50	.40

788 Dishes, Evaporating, German Porcelain. Glazed inside with light rim, shallow.

No.	00000	00000	000	00	0	1
Dia.	2	2 1/2	3	3 1/2	4 1/4	5 1/2 in.
Capacity	3/4	1 1/4	2	3	4	8 oz.
Each	\$0.10	.12	.15	.18	.20	.25

789 Dishes, Evaporating, Royal Berlin shape No. 785, but of Thuringian make; a good dish for regular laboratory work; glazed inside and outside.

No.	00	0	1	2	3	4	5
Capacity	1	1 1/2	2	3	4	6	8 oz.
Dia.	2 3/4	3	3 1/4	3 1/2	4	4 1/4	4 1/2 in.
Each	\$0.10	.12	.15	.18	.20	.30	.35



790



791



792

790 Dishes, (Basins) of Electroquartz, not transparent.

B 1	B 3	B 5	B 9	B 12	B 13
2	2 3/4	3 1/4	3 7/8	5 1/8	6 in.
Depth	1 1/8	1 1/8	1 1/8	2 1/2	2 1/2 in.
Each	\$1.00	1.20	1.30	1.60	2.90
					3.00

791 Dishes, Evaporating, Agateware.

No.	1	2	3	4	5	6	7	8	9
Capacity	pt.	qt.	1/2	1	2	3	4	5	6 gal.
Each	\$0.90	1.15	1.50	2.10	3.00	4.20	5.70	9.30	11.70

792 Dishes, lead, shallow form.

Dia.	2	2 1/2	3	4	5	6 in.
Each	\$0.12	.15	.20	.25	.35	.45



795



796



797

No.

793 Dishes, pure solid nickel. With lip.

Dia.	40	60	80	100	150 mm.
Each	\$0.45	.65	1.00	1.40	2.40

Dishes, platinum. See platinum.

794 Dishes, pure silver.	Any size made to order.	Price on application.			
795 Dishes, German Silver, large.	With lip and counterpoise, for weighing sugar samples		\$2.00		
796 Dishes, s. c. Moist Chambers.	With cover; dia. 9 in. inside; height 2½ in.			1.50	
797 Dishes, Petri's Culture.	A double dish, very flat, loosely fitting cover, dia. 4 in. ....				.30



798



799



799a

798 Dishes, Preparation. These jars have no contraction at the top; the cover being grooved and ground makes them air tight.

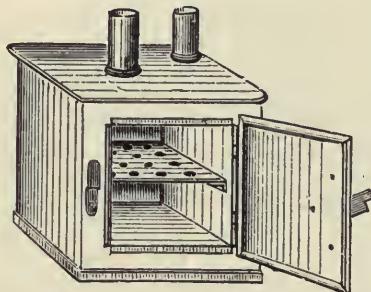
Size	A	B	C	D
Height	3½	1⅓	1	¾ in.
Dia.	2⅔	2⅔	2	1⅜ in.
Doz.	\$2.00	1.80	1.50	1.20
Each	.20	.18	.15	.12

799 Dishes, Staining.	Watch glass form. Beveled edge and flat bottom, with groove to allow setting upon top of each other, with ground mark on edge for writing on surface.....	Doz.	\$1.00
799a Dishes, Aluminum,	flat bottom, straight sides, for milk analysis and moisture determination.		
Size, 2 in. diameter, ½ in. high		Each	.30
Size, 2½ in. diameter, ¾ in. high		Each	.35
Size, 3 in. diameter, ¾ in. high		Each	.40
799b Drum Emptier.	For emptying acid drums; of glass with rubber connections. The only satisfactory piece of apparatus for emptying acid drums with ease and safety. Prevents all loss of acids and avoids necessity of puncturing drum with air hole to get steady flow. A great saving to mills using acids in these containers. Price	Each	4.00

Drying Baths, Drying Ovens, Air Baths, Etc.



800

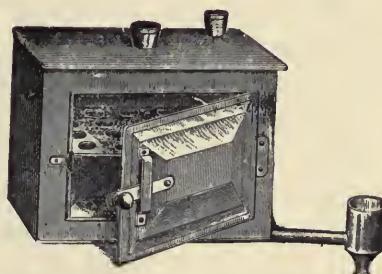


801

No.	Description	Size	Price
800	Drying Apparatus, Victor Meyer's. Of brazed copper, for drying at a constant temperature, inside space, 7 cm. high, 6 cm. diameter.....		\$8.00
801	Drying Bath, double wall, of tin. With inlet for water and opening for thermometer. Size 6 x 8 in.		3.00
802	Drying Bath. Same, with support, No. 812		4.00

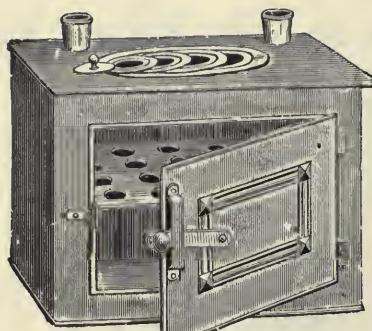


803

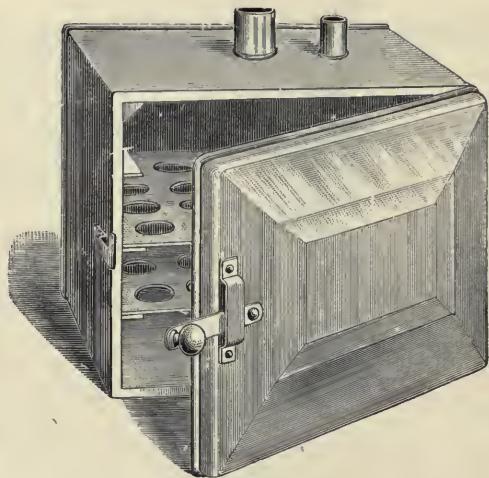


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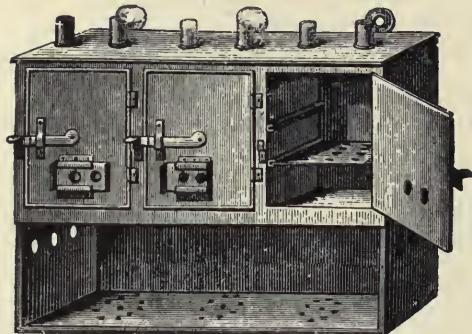
803	Drying Bath, double wall, of copper. With inlet for water and opening for thermometer, movable shelf, and extra sheet iron bottom.	
	Size	6x8 8x10 10x12 in.
	Each	\$7.00 9.00 13.00
804	Drying Bath. Same, with support, No. 812, or on 4 legs.	
	Each	\$8.00 10.00 14.00
805	Drying Bath. Same as No. 803, with Kekule's constant water level attachment.	
	Size	6x8 8x10 10x12 in.
	Each	\$8.50 10.00 14.00
806	Drying Bath. Same, with support, No. 812, or on 4 legs.	
	Each	\$9.50 11.00 15.00



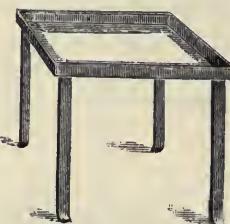
807



809



811



812

No.

807 **Drying Bath, double wall, of copper.** With extra water bath on top, opening for thermometer, movable shelf and extra sheet iron bottom.

Size	6x8	8x10	10x12 in.
Each	\$8.00	10.00	15.00

808 **Drying Bath.** Same, with support, No. 812, or on 4 legs.

Each	\$9.00	11.00	16.00
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809 **Drying Oven or Air Bath, single wall, of copper.** Opening for thermometer, movable shelf, and extra sheet iron bottom.

Size	6x8	8x10	10x12 in.
Each	\$4.00	6.00	8.00

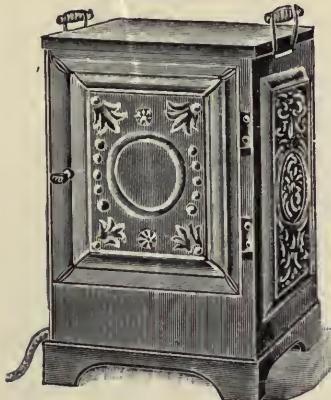
810 **Drying Oven or Air Bath.** Same, with support No. 812, or on 4 legs.

Each	\$5.00	7.00	9.00
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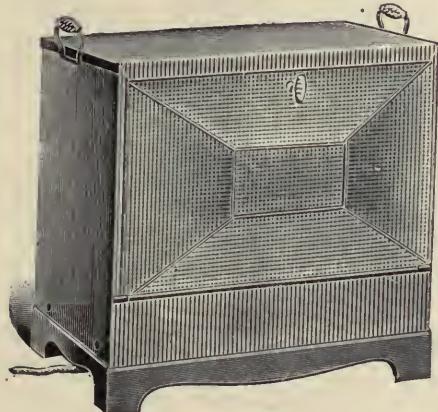
811 **Drying Oven, with 3 separate compartments, of heavy copper.** Each about 7½ in. wide and with two tubulatures, extra ventilators, the whole resting on a sheet iron support for taking in the burners \$20.00

812 **Drying Oven Supports, of iron.** With set screws by which the oven is held firmly.

Size	6x8	8x10	10x12 in.
Each	\$1.00	1.00	1.00



No. 1605



No. 1606

Electric Drying Ovens

No. 812a



No. 1608

The double walls of these ovens are packed with asbestos to conserve the heat, and when the door is closed it becomes an air-tight box. Within, at the top and the bottom of the oven, are the two heating plates. As soon as the current is turned on, these at once become hot throughout their whole area and give a steady, measured heat to every part of the oven, a heat that comes from above as well as below; a heat that is the same every time with the same position of the switch, and the effect can be measured by the clock.

The electric oven can be placed where it is most convenient to reach without stooping. In use it will not affect the temperature of the room.

No.		Watts.	Price.
1605	Oven. Inside dimensions, 12 in. wide, 12 in. deep, 14 in. high. Weighs 30 lbs. Three heats. Four feet cord and plug switch	1100	\$20.00
1606	Oven. Inside dimensions, 19 in. wide, 12 in. deep, 13 in. high. Weighs 60 lbs. Three heats. Four feet cord and plug switch	1600	25.00
1608	Oven. Inside dimensions, 15 in. wide, 18 in. deep, 11½ in. high. Weighs 75 lbs. Three heats. Four feet cord and indicating snap switch on front.....	1600	40.00
1609	Oven. Inside dimensions, 15 in. wide, 18 in. deep, 11½ in. high. Weighs 76 lbs. Same style as No. 1608 with thermometer. Three heats. Four feet cord and indicating snap switch on front	1600	45.00*
1610	Oven. Inside dimensions, 21½ in. wide, 19 in. deep, 13 in. high. Weighs 115 lbs. Three heats. Four feet cord and indicating snap switch on front.....	2400	60.00



815

No.

813 Emery Cloth.....Sheet \$0.10

814 Emery Paper.....Sheet .05

815 Files, ratail. Round with fine points.

	Length	3	4	5	6	8 in.
Each	\$0.12	.15	.18	.20	.25	



816

816 Files, triangular. For cutting glass tubing.

	Length	3	4	5	6	8 in.
Each	\$0.12	.15	.18	.20	.25	



817

817 Files, flat. Best double cut.

	Length	3	4	5	6	8 in.
Each	\$0.12	.15	.18	.20	.25	

818 File Handles.....Doz. .50

FILTER PAPER



819-820



821-822

Cut in round filters, 100 filters in a package, and in sheets of special sizes.

No.

819 Filters, D. F. C. Co. Strong and uniform in texture; excellent for clear and rapid filtration.

Dia.	4	5	6	7	8 in.
White, per 100	\$0.12	.15	.20	.26	.33

820 Filters. Gray, per 100 .11 .14 .18 .24 .28

In sheets, size 19x19 in., white..... Ream, \$7.00; Quire \$0.40
In sheets, size 19x19 in., gray..... Ream, 6.00; Quire .35

821 Filters, Prat-Dumas & Co., French, round cut, white.

No.	7	10	13	15	19	25	33	40	45	50
Dia.	3	4	5	6	8	10	13	15	18	20 in.
Per 100	\$0.10	.18	.20	.25	.30	.40	.60	.80	1.00	1.20
In sheets, size 21x17 in.....										Ream, \$5.00; Quire .30

822 Filters, Prat-Dumas & Co., French, round cut, gray.

No.	15	19	25	33	40	45	50
Dia.	6	8	10	13	15	18	20 in.
Per 100	\$0.20	.25	.30	.50	.70	.90	1.10
In sheets, size 21x17 in.....							

823 Filters, Baker & Adamson's. Washed in hydrochloric and hydrofluoric acid, giving the lowest ash of any filter paper on the market. Put up in boxes holding 100 round filters. "Double Washed."

Dia.	5½	7	9	11	12½	15 cm.
Ashes, 1 filter	.00001	.00002	.00003	.00005	.000065	.000093 grm.
Per 100	\$0.40	.50	.65	.80	1.00	1.20

824 Filters, Baker & Adamson's. Washed in hydrochloric acid only. "Single Washed."

Dia.	5½	7	9	11	12½	15 cm.
Per 100	\$0.15	.30	.45	.55	.60	.85



826



827

No.

825 **Filters, Schleicher & Schuell's, S. & S. No. 595.** A good light paper, free of chlorine, grained surface, round filters.

Dia.	5½	7	9	11	12½	15	18½	24	32 ctm.
Per 100	\$0.12	.15	.20	.23	.25	.30	.40	.60	1.00
In sheets, 47x54 ctm.....								Ream, \$10.00; Quire \$0.60	

826. **Filters, S. & S. No. 597.** A heavy paper, perfectly white and quick filtering. Round filters.

Dia.	5½	7	9	11	12½	15	18½	24	32 ctm.
Per 100	\$0.15	.20	.25	.30	.35	.40	.55	.75	1.15
In sheets, 58x58 ctm.....								Ream, \$18.00; Quire 1.00	

827. **Filters, S. & S. No. 589, "White Ribbon."** Washed with hydrochloric and hydrofluoric acid; filtering quickly and retaining BaSO₄.

Dia.	5½	7	9	11	12½	15 ctm.
Per 100	\$0.60	.70	.90	1.10	1.35	1.60

828. **Filters, S. & S. No. 589, "Black Ribbon."** Washed with hydrochloric and hydrofluoric acid; prepared especially for use in laboratories for metallurgy. Round filters, ashes same as No. 589 regular.

Dia.	5½	7	9	11	12½	15 ctm.
Per 100	\$0.60	.70	.90	1.10	1.35	1.60

829. **Filters, S. & S. No. 590.** Washed with hydrochloric and hydrofluoric acid, the washing having been carried to the utmost limit. Round filters.

Dia.	5½	7	9	11	12½	15 ctm.
Per 100	\$0.75	.80	1.15	1.45	1.65	2.00

829a. **Filters, S. & S. No. 588, Folded.** Entirely free from chlorine; always ready for use; packed in neat boxes of 100 each.

Dia.	12½	18½	24 ctm.
Per 100	\$0.35	.50	.75



830-833.



830-833

No.

830 Filters, Munktell's Swedish No. 0. Washed with hydrochloric acid, removing traces of iron, alumina, lime, etc.; round filters.

Dia.	5½	7	9	11	12½	15	18½ ctm.
Per 100	\$0.20	.27	.42	.55	.63	.85	1.25

831 Filters, Munktell's Swedish No. 1 F. Leaves the smallest amount of ash of any unwashed paper; round filters; 5 packages in a birch bark box.

Dia.	5½	7	9	11	12½	15	18½ ctm.
Per 100	\$0.11	.16	.25	.30	.40	.50	.75

In sheets, 48x48 ctm..... Ream, \$20.00; Quire \$1.20

832 Filters, Munktell's Swedish No. 2. A superior paper for laboratory work; round filters, 5 packages in a birch bark box.

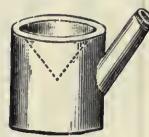
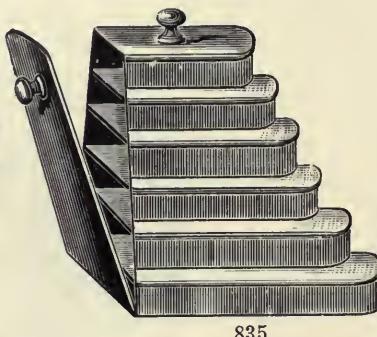
Dia.	5½	7	9	11	12½	15	18½ ctm.
Per 100	\$0.10	.13	.20	.26	.31	.40	.53

In sheets, 48x48 ctm..... Ream, \$17.00; Quire 1.00

833 Filters, Munktell's Swedish No. 3. A paper of superior quality, heavier than No. 2, filters rapidly; round filters.

Dia.	5½	7	9	11	12½	15	18½ ctm.
Per 100	\$0.08	.10	.15	.18	.24	.32	.41

In sheets, 48x48 ctm..... Ream, \$14.00; Quire .80



No.

834	Filter Bags, best white, s. c. "Felt Filters."										
	No.	1	2	3	4	5	6	7	8	9	10
	Dia.	7	8	9	11	13	14	16	18	20	22 in.
	Capacity	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{3}$	2	3	4	$5\frac{1}{2}$ gal.
Each	\$0.50	.60	.70	1.00	1.25	1.50	1.75	2.00	2.50	3.50	

835 **Filter Case**, of tin, to protect round filters from dust; for 6 sizes, 5½ to 15 ctm. diameter Each \$3.00

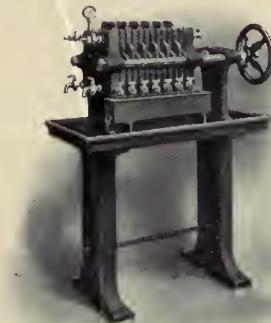
836 **Filter Dryer**, of porcelain, for drying precipitates on the filter. Each 1.50

837 **Filter Rings**, of porcelain, as support for funnels over beakers, etc.
2 arms, 25c; 3 arms..... .35



838

838	Filter Press , experimental, round pattern, for laboratory use, built to stand a pressure of 150 pounds to the square inch; made with flat plates and frames, so that filter paper or cloth can be used; of iron, with brass valves fitted to pump, weight about 125 lbs. Price.....Net 60.00
-----	--



839

No.

839 New Laboratory Filter Press.

This Laboratory Filter Press is a complete working model of the highest type of Filter Press. Each plate presents one square foot of filtering area and the chamber has a capacity of one twenty-fourth of a cubic foot. There are six chambers, so that the exposed filtering area is six square feet with a capacity for solids of one-quarter cubic foot. It is arranged so that the filtered material may be discharged through internal ports without exposure to air, or discharged into an open trough, and it is equipped with ports for absolute washing or extraction.

There is supplied with the Press when desired a specially constructed Montejas for feeding the Press, which is much more convenient than a pump where compressed air is available.

Price of Filter Press	\$100.00
Price of Montejas	30.00



840

No.

840 Filter Plates. Porcelain, with small holes.

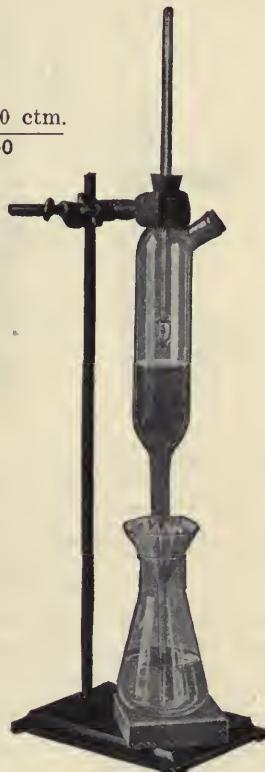
Dia.	2	4	5	6	8	10 ctm.
Each	\$0.15	.20	.25	.30	.45	.60

840a Filtering apparatus, Fitzgerald's Constant Level.

The apparatus works the same as inverting a flask containing the liquid to be filtered over a funnel with its filter paper, having the opening of the flask a little below the edge of the paper, but does the work more conveniently and accurately. When wanted for use it is set up as illustrated, with the lower opening about three-sixteenths of an inch below the edge of the paper. The glass rod is pushed down until the ground stopper closes the opening. The rubber stopper is then removed from the side opening and the liquid to be filtered is poured in. The glass rod is then gently raised till enough liquid has entered the funnel to close the lower opening. At this point the stopper is replaced in the side opening and rod raised an inch or two. The level of the liquid in the funnel starts to recede at once, exposing the lower opening, allowing air to enter at this point, with the consequent replenishing of the liquid to the funnel. After a filtration is made the precipitate may be washed in like manner with distilled water.

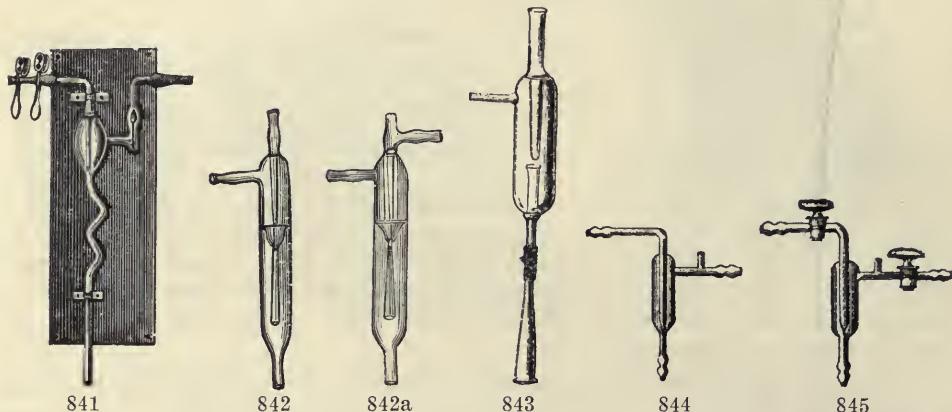
A great variety of work can be done by this useful little device and it is especially valuable when, as frequently happens, the chemist has no time to complete a filtration by hand before leaving for home at night and can put the liquid in the apparatus before leaving the laboratory and find it filtered next morning.

Price Net \$2.50



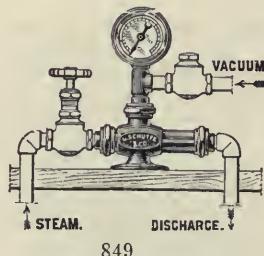
840a

FILTERING PUMPS



No.

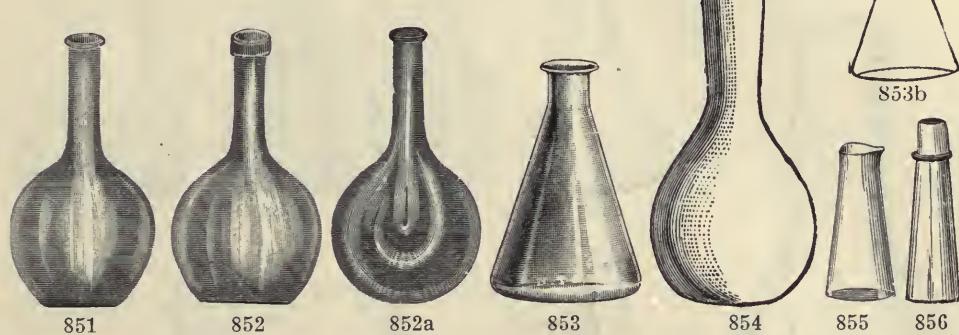
841	Filtering Pumps, Geissler's. With valve, the glass parts only.....	\$1.50
842	Filtering Pumps, Finkner's. Glass.....	1.20
842a	Filtering Pumps, Finkner's. Glass, double suction.....	1.30
843	Filtering Pumps, Muencke's. Glass.....	1.20
844	Filtering Pumps, Fischer's. Glass, plain.....	1.00
845	Filtering Pumps, Fischer's. Glass, with 2 stopcocks.....	3.00



No.

846	Filtering Pumps, Chapman's. All brass. Size Small _____ Large _____		
	Each \$1.40 1.80		
847	Filtering Pumps, Chapman's Couplings. Size Small _____ Large _____		
	Each \$0.30 .40		
848	Filtering Pumps, Richards'. Brass, of superior make.....	\$2.00	
848a	Filtering Pumps, Richards'. Brass, extra large.....		7.00
849	Filtering Pumps, or Universal Steam Jet Laboratory Exhauster, with $\frac{1}{4}$ -inch connections, requiring for operation a volume of steam equal to the evaporation of 12 pounds water per hour; complete with gauge and stop and check valve.....		Net 12.00
850	Finger Cots. Pure gum, thin..... Pure gum, thick.....	Doz. .50	Doz. .50

FLASKS



No.

851 Flasks, chemical. "Resistance glass," vial mouth, flat bottom, well annealed.

Capacity	1	2	4	6	8	12	16	24 oz.
Each	\$0.08	.10	.12	.15	.18	.20	.25	.30
Capacity	32 oz.	3 pt.	½	¾		1 gal.		
Each	\$0.35	.40	.45	.60	.80			

852 Flasks, chemical. "Resistance glass," flat bottom, ring neck to bear corking.

Capacity	4	6	8	12	16	24	32 oz.	3 pt.	½	¾	1 gal.
Each	\$0.12	.15	.18	.20	.25	.30	.35	.40	.45	.60	.80

852a Flasks, chemical. "Resistance glass," round bottom, vial mouth.

Capacity	2	4	6	8	12	16	32 oz.
Each	\$0.10	.12	.15	.18	.20	.25	.35

853 Flasks, Erlenmeyer's. "Resistance glass."

Capacity	1	2	4	6	8	12	16	24	32 oz.	½ gal.
Each	\$0.08	.10	.12	.15	.18	.20	.25	.30	.35	.50

853a Flasks, Erlenmeyer's. Jena Glass.

Capacity	50	100	200	300	500	600 cc.
Each	\$0.10	.15	.20	.25	.30	.35

853b Flasks, Erlenmeyer's, with glass stoppers.

Capacity	4	8	16	32 oz.
Each	\$0.40	.50	.65	.80

854 Flasks, copper determination. "Resistance glass," pear-shaped, wide mouth and broad flange.

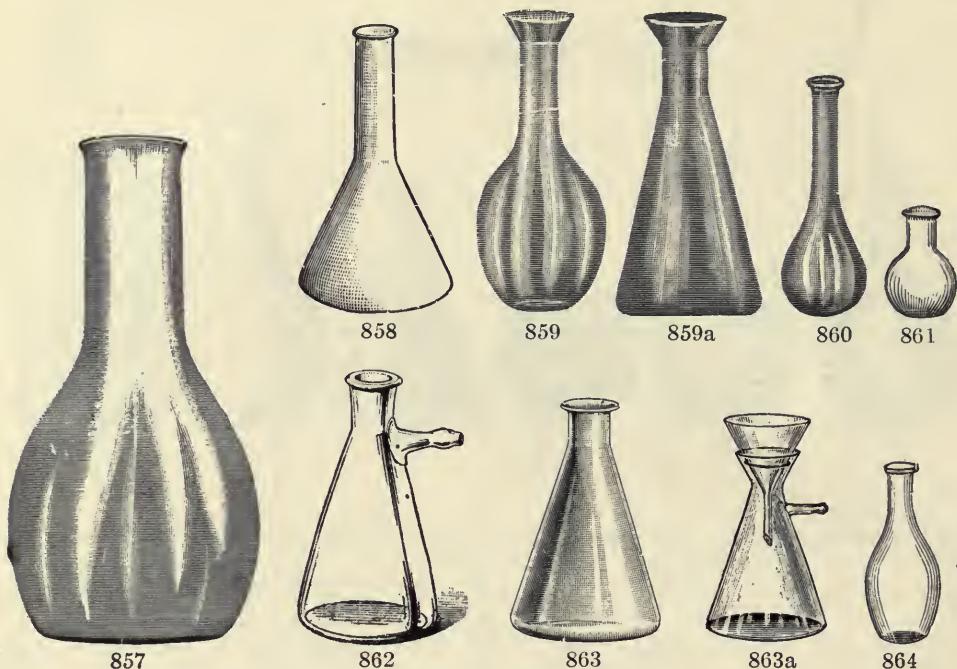
Capacity	2	4	6	8	16 oz.
Each	\$0.15	.18	.20	.25	.30
Doz.	1.50	1.60	1.80	2.00	3.00

855 Flasks, conical, with lip. Wide opening for precipitations, etc.

Capacity	4	8	16 oz.
Each	\$0.20	.25	.30

856 Flasks, parting, or assay. Conical form, with ring, flat ground top.

Capacity	1	2	4	6	8 oz.
Each	\$0.12	.15	.18	.20	.25
Doz.	1.20	1.50	1.80	2.00	2.50



No.									
857	Flasks, parting.	Colorado form, pear-shaped.							
	Capacity	1/2	1	2 oz.					
	Each	\$0.10	.12	.15					
	Doz.	1.00	1.20	1.50					
858	Flasks, parting.	Montana style.	Capacity 1 oz.....						Doz. \$1.20
859	Flasks, Low's.	For copper determination, with funnel top.							
	Capacity, 4 oz.							Each .15	
	Capacity, 6 oz.							Each .20	
859a	Flasks, Low's form.	For treating insoluble residues, with funnel top.							
	Capacity, 4 oz.....							Each .15	
860	Flasks, digesting.	Bohemian glass, for Kjeldahl's nitrogen determination.							
	Capacity 200	250	500	750	1000 cc.				
	Each	\$0.20	.25	.35	.40	.50			
860a	Flasks, digesting, Kjeldahl's Jena Glass.								
	Capacity 200	300	500	800	1000 cc.				
	Each	\$0.25	.30	.40	.50	.60			
861	Flasks, extraction or carbonic acid.	With extra wide and low necks.							
	Capacity 2	4	6	8 oz.					
	Each	\$0.12	.15	.20	.25				
862	Flasks, filtering, conical, with side neck.	For use with filter pump.							
	Capacity 8	16	32 oz.						
	Each	\$0.35	.45	.60					
863	Flasks, filtering, Bunsen's.	Conical, very heavy glass to withstand pressure.							
	Capacity 16	32 oz.							
	Each	\$0.35	.50						
863a	Flasks, filtering, Walther's.	For use with rubber rings.							
	Capacity	8	16	32 oz.					
	Complete, each	\$0.75	1.00	1.25					
864	Flasks, generating, s. c.	Gas bottles.							
	Capacity	8	16	24	32 oz.				
	Each	\$0.20	.25	.30	.35				



No.

865 Flasks, fractional distillation. With side tube.

Capacity	2	4	8	16	32 oz.
Each	\$0.20	.25	.30	.45	.65

866 Flasks, pressure. For digestions, of heavy glass, well annealed, with patent stopper.

Capacity	100	150	200 cc.
Each	\$0.40	.50	.60

867 Flasks, polarization, Kohlrausch's. With mark on neck.

Capacity	50	100	200	200.6	201.4	401.2 cc.
Each	\$0.30	.40	.50	.55	.60	.80

868 Flasks, sugar flasks. With two marks on neck.

Capacity	50 and 55	100 and 110	200 and 220 cc.
Each	\$0.25	.30	.50

869 Flasks, sugar flasks, after Stift, with funnel-shaped neck, capacity 201.2 cc.

Each \$0.60

870 Flasks, volumetric, "Litre Flasks." Most accurately graduated.

Capacity	10	25	50	100	200	250	300	500	1000	2000 cc.
Each	\$0.15	.18	.20	.25	.30	.40	.45	.50	.65	1.00

871 Flasks, volumetric. With glass stopper.

Capacity	10	25	50	100	200	250	300	500	1000	2000 cc.
Each	\$0.20	.25	.30	.35	.40	.50	.55	.65	.80	1.20

872 Flasks, volumetric, neck with dark enameled stripe on white enameled background, giving a definite meniscus.

Capacity	100	250	500	1000	2000 cc.
Each	\$0.40	.50	.75	1.00	1.50

873 Flasks, normal volumetric, with in and out-pouring mark.

Capacity	250	500	1000 cc.
Each	\$0.75	1.00	1.25

874 Flasks, Giles, of 1100 cc. capacity; graduated at 1000 and 1100 cc. For use in making up normal solutions

\$1.50



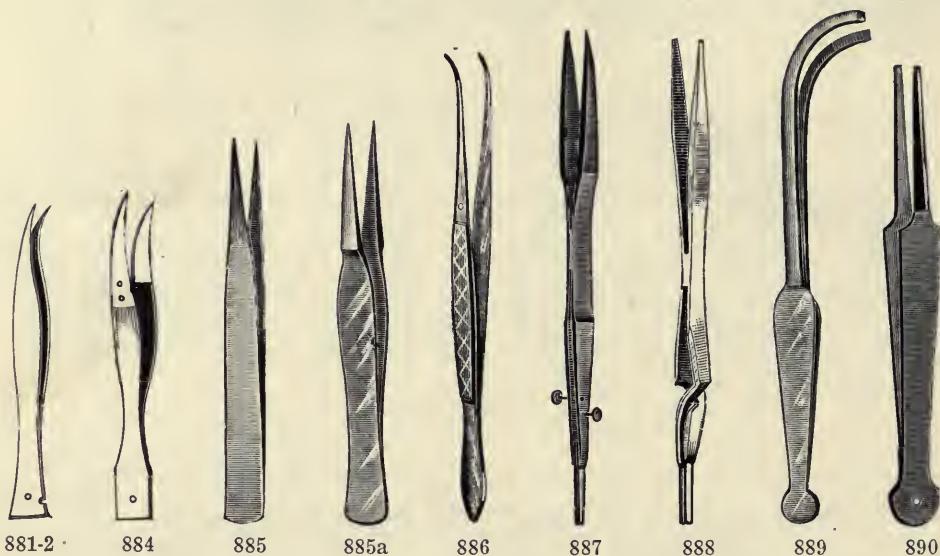
No. 876.

876 Flask Heater, Electrical.

For laboratory use, ring top. It is substantially made of copper, fitted with heater with controlling switch, and is intended for the many operations where a gentle or moderate constant supply of heat is required.

The over-all diameter is eight and one-half inches, and it stands four inches high.
3 heats; 500 watts Price \$12.00

FORCEPS

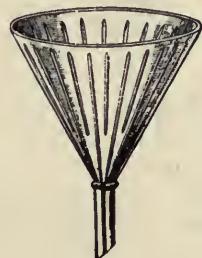


No.					
881	Forceps, brass, bent ends				\$0.20
882	Forceps, nickel-plated, bent ends .....				.25
883	Forceps, nickel-plated, straight ends, with ivory tips .....				.60
884	Forceps, nickel-plated, bent ends, with ivory tips .....				.60
885	Forceps, nickel-plated, with fine points, non-magnetic .....				.25
885a	Forceps, nickel-plated, extra stout, straight .....				.25
886	Forceps, nickel-plated, especially adapted for fine weights .....				.75
887	Forceps, Plattner's nickel-plated, forceps on both ends, with platinum tips ..				4.00
888	Forceps, French style, with heavy platinum tips				4.00
889	Forceps, Goosenecks, nickel-plated, 6 inches long .....				.40
890	Forceps, steel, plain, for holding lead button while slagging.				

Size	4	5	6	7	8 in.
Each	\$0.10	.12	.20	.30	.40
Doz.	1.00	1.20	2.00	3.00	4.00

FUNNELS

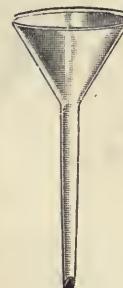
901



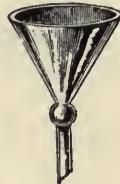
903



904a



905



906

No.

901 **Funnels, best German glass.** Angle 60°, stems ground to a point.

Dia.	1½	2	2½	3	3½	4	5 in.
Each	\$0.08	.10	.12	.15	.18	.20	.25
Dia.	6	7	8	9	10	12	in.
Each	\$0.30	.40	.50	.65	1.00	1.50	

902 **Funnels, glass, plain, pressed.**

Dia.	4	5	6	7 in.
Capacity	4	8	16	32 oz.
Each	\$0.10	.12	.15	.20

902a **Funnels, glass, plain, stemless, for sugar analysis.**

Dia.	3½ in.	4 in.
Doz.	\$1.50	2.00

903 **Funnels, glass, ribbed, pressed.**

Dia.	4	5	6	7	8½ ½	10 in.
Capacity	4	8 oz.	pt.	qt.	½	1 gal.
Each	\$0.12	.15	.20	.25	.40	.70

903a **Funnels, glass, ribbed, stemless, for sugar analysis.**

Dia.	4 in.
Doz.	\$2.00

904a **Funnels, quick filtering.** With 6-in. stem with loop.

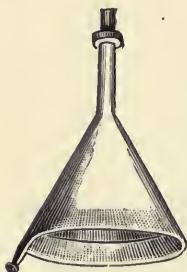
Dia.	2½	2¾	3 in.
Each	\$0.25	.28	.30

905 **Funnels, Bunsen's.** With thin and extra long stems, top ground even, and stem ground to a point, angle 60°.

Dia.	1½	2	2½	2¾	3	3½	4 in.
Each	\$0.12	.14	.16	.18	.20	.25	.30

906 **Funnels, glass, with bulb.** For filtering through glasswool or asbestos.

Dia.	6	8 in.
Each	\$0.50	.75



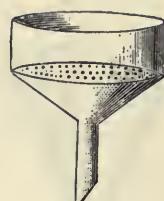
907



908a



909



910

No.
907 Funnels, glass, Victor Meyer's. To suspend over evaporating dishes, with tubulation.

Dia.	6	8	10 in.
Each	\$1.25	1.50	1.75

908 Funnels, porcelain, plain, with handle.

Dia.	4	5	6	7 in.
Each	\$0.40	.70	1.00	1.40

908a Funnels, porcelain, ribbed inside, with handle.

Dia.	4	5	6	7 in.
Each	\$0.50	.80	1.25	2.00

909 Funnels, porcelain, Hirsch's. For filtering by pressure, with fixed perforated porcelain plate.

Dia.	2 3/4	3 1/2 in.
Each	\$0.50	.75

910 Funnels, porcelain, Buechner's. With fixed perforated porcelain plate straight walls.

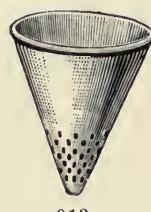
Dia.	4	6	8 in.
Each	\$1.25	2.00	3.00



911



912



913



913a

911 Funnels, agateware.

Capacity	1/2 pt.	pt.	qt.	1/2	1 gal.
Each	\$0.35	.40	.45	.50	.60

912 Funnels, hard rubber.

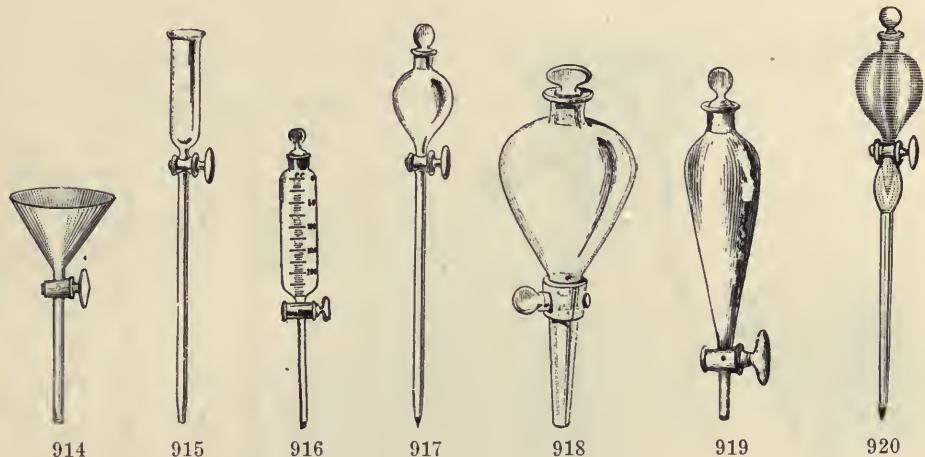
Capacity	4	6	8	16	32 oz.
Each	\$0.40	.50	.60	.70	.80

913 Funnels, porcelain, perforated, small holes.

Dia.	4	5	6	8 in.
Each	\$0.65	.90	1.40	1.80

913a Funnels, porcelain, perforated, with large oval holes.

Dia.	4	5	6	8 in.
Each	\$0.65	.90	1.40	1.80



No.

914 Funnels, Separatory, open top, usual form, angle 60°, with stopcock.

Dia.	3	4	5	6	7 in.
Each	\$1.25	1.50	1.75	2.50	3.00

915 Funnels, Separatory, cylindrical shape, with stopcock.

Capacity	2	4	6	8 oz.
Each	\$1.00	1.10	1.20	1.40

916 Funnels, Separatory, cylindrical, stoppered, graduated 100 cc. in 1 cc..... \$2.00

917 Funnels, Separatory, globe shape, light stoppered.

Capacity	2	4	6	8	16 oz.
Each	\$1.00	1.20	1.35	1.50	2.00

918 Funnels, Separatory, globe shape, heavy glass, stoppered.

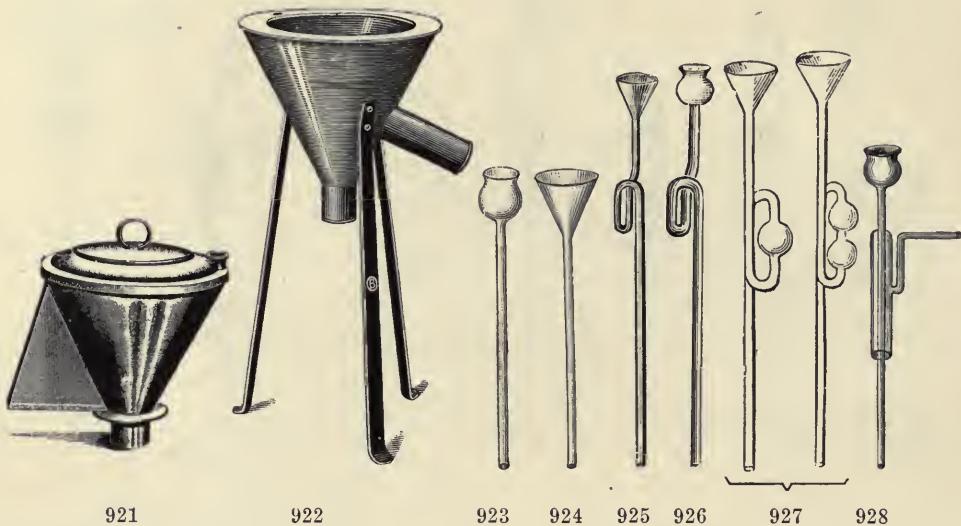
Capacity	pt.	qt.	½	1 gal.
Each	\$2.00	2.50	3.00	4.00

919 Funnels, Separatory, Squibb's, stoppered.

Capacity	4	8	16 oz.
Each	\$1.25	2.00	2.50

920 Funnels, Dropping, Walter's. For examining single drops. Capacity, 60 cc.

Each 1.50



921

922

923

924

925

926

927

928

No.

921 Funnel, tin, Plantamour's. For hot filtrations, 5 $\frac{1}{4}$ in. on top inside..... \$2.00

922 Funnel, copper, on three iron legs. For hot filtrations, dia. 6 in..... 4.00

923 Funnel Tubes, thistle top.

	Length	8	10	12	15 in.
	Each	\$0.06	.08	.10	.12

924 Funnel Tubes, conical top.

	Length	10	12	15	18 in.
	Each	\$0.10	.12	.15	.20

925 Funnel or Safety Tube, bent; thistle top..... .20

926 Funnel or Safety Tube, bent; conical top..... .20

927 Funnel or Safety Tube, with bulbs: funnel top.

	With	1	2	3 bulbs.
	Each	\$0.20	.25	.30

928 Funnel Tubes. Vogel's..... .40

THE LARGEST MANUFACTURERS OF FURNACES IN THE WORLD.

TILE LINED MUFFLE FURNACES

FOR COAL, COKE, WOOD OR CRUDE OIL.

Makers of

MUFFLE, CRUCIBLE, COMBINATION AND MELTING FURNACES FOR
COAL, COKE, WOOD, GASOLINE, GAS, AND CRUDE OIL.



Fig. 1

COAL, COKE, WOOD AND CRUDE OIL FURNACES.

The comparative cheapness of soft coal as a fuel, combined with the great capacity of these tile-lined furnaces, has resulted in a steadily increasing demand for them, to meet which we have designed a complete line, taking the various sizes of muffles shown. We have sold hundreds of these furnaces, and they are giving entire satisfaction. We have yet to receive a single complaint regarding them.

Where wood, coke or crude oil only is available, we also build in several sizes, furnaces for these fuels, of the same general design as the coal furnaces.

Figures 1, 2 and 3 show the two-muffle furnace. The portions which are dotted are special fire clay tile, each tile having an individual letter, so that it can be easily determined where each tile belongs by referring to the blue print, which is supplied with the furnaces. On this account the construction is simple; any brick mason can set it up in half the time required for a furnace lined with brick, saving in the cost of the construction twice over the small additional cost of the tile over the fire brick. Then, when the furnace is built, there is no danger of error in construction, and it is sure to give entire satisfaction. Moreover, the tile lining being more durable, it is much cheaper in the long run. The lined sections in the figures indicate the ordinary red or building brick. Many times, in re-lining these furnaces, it is not necessary to tear down anything except to break an opening in the back wall of the red brick jacket, through which the old tile are taken out and the new ones set into place.

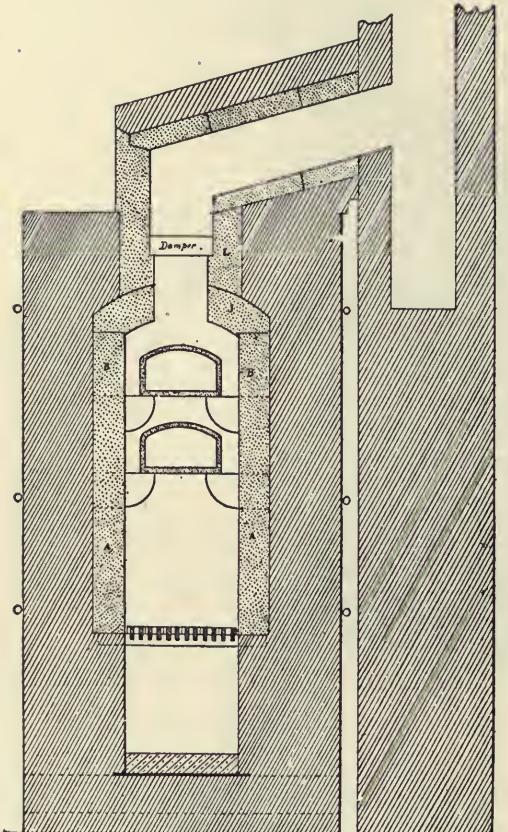


Fig. 2

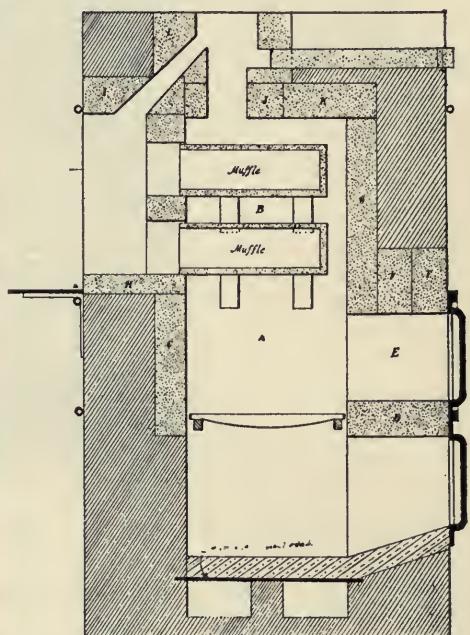


Fig. 3

The regular stock size of the one and two-muffle furnace is made to fire from the back, i. e., the side opposite the muffle opening. Firing this way the heat is more even, and controlled much better than when fired from the side, in which case the side opposite the fire door is usually the hottest. However, if a back-fire furnace cannot be used, inform us of your wants and difficulties, and we can probably overcome them. Full particulars regarding these furnaces will be gladly supplied any prospective customer.

The single-muffle furnace is similar to the two-muffle one shown in figures 1, 2 and 3, except that it is the height of one muffle lower.

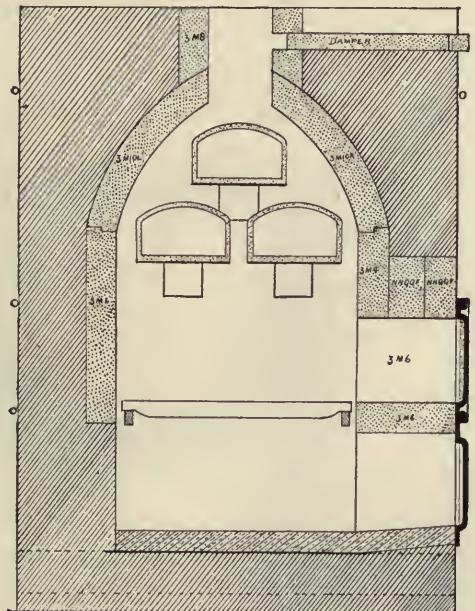


Fig. 4

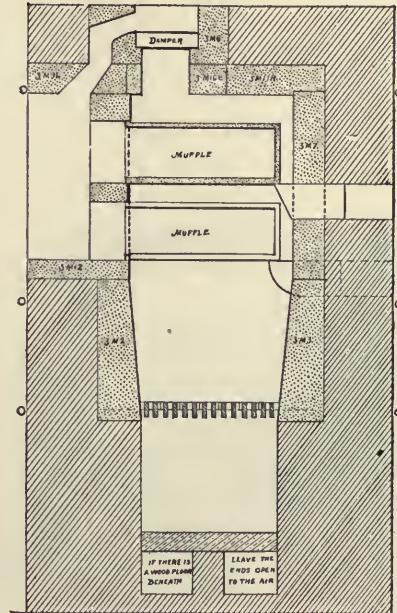


Fig. 5

Figures 4 and 5 show our three-muffle coal furnace, which is also made of special fire clay tile lining, ready to set into place, each tile having an individual letter. These furnaces you will note are fired from the side.

The price of the following tile lined furnaces includes the special fire clay tile lining as indicated by the dotted sections, and the necessary fire clay to set it up, also the iron work, including the grate bars, grate-bar supports, an iron shelf in front of the muffle, brackets, angle iron and binding rods, fire-box and ash-pit doors—in fact, everything necessary except the red brick jacket, and the fire brick necessary for lining the stack proper. Where the inclined flue connecting the furnace to the stack can be built according to Figure 1, the fire clay tile lining is included in the price.

LL Muffle is $9 \times 15 \times 5\frac{3}{4}$ inches outside. QQ Muffle is $12\frac{1}{2} \times 19 \times 7\frac{3}{4}$ inches outside.
NN Muffle is $10\frac{1}{2} \times 19 \times 6\frac{1}{2}$ inches outside. UU Muffle is $14 \times 19 \times 7\frac{1}{4}$ inches outside.

The prices are as follows:

LL	Double-Muffle Coal or Crude Oil Furnace.....	Price \$55.00
NN	Double-Muffle Coal or Crude Oil Furnace.....	" 60.00
QQ	Double-Muffle Coal or Crude Oil Furnace.....	" 65.00
UU	Double-Muffle Coal or Crude Oil Furnace.....	" 70.00
NN	Single-Muffle Coal or Crude Oil Furnace.....	" 50.00
QQ	Single-Muffle Coal or Crude Oil Furnace.....	" 55.00
UU	Single-Muffle Coal or Crude Oil Furnace.....	" 60.00
NN	Three-Muffle Coal Furnace.....	" 65.00
QQ	Three-Muffle Coal Furnace.....	" 70.00
LL	Double-Muffle Wood Furnace.....	" 55.00
NN	Double-Muffle Wood Furnace.....	" 60.00
QQ	Double-Muffle Wood Furnace.....	" 65.00
UU	Double-Muffle Wood Furnace.....	" 70.00
NN	Single-Muffle Wood Furnace.....	" 50.00
QQ	Single-Muffle Wood Furnace.....	" 55.00
UU	Single-Muffle Wood Furnace.....	" 60.00
NN	Single-Muffle Coke Furnace.....	" 55.00
QQ	Single-Muffle Coke Furnace.....	" 60.00
UU	Single-Muffle Coke Furnace.....	" 65.00

Note.—The floor space required for these furnaces is approximately three and a half by four feet, not including the stack.

We also manufacture the "Wiley" armored furnaces. Write for particulars.

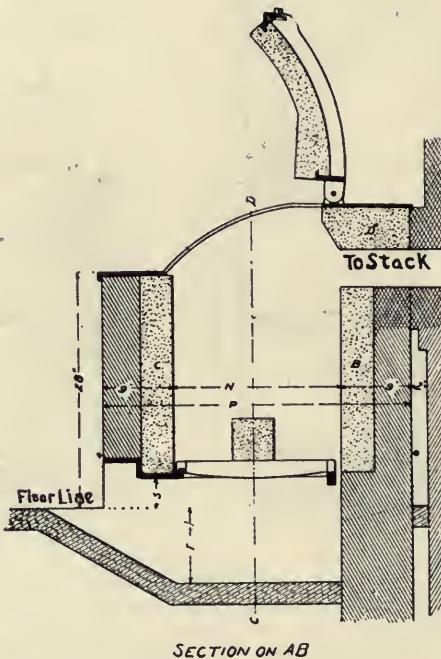


Fig. 6

EULLION OR MELTING FURNACES.

Figure 6 illustrates our special furnace, using coke as fuel, made for refining bullion. This furnace is also lined with special fire clay tile, each tile having an individual letter.

It is made in two sizes, the smaller being for one black lead crucible from No. 12 to 20 or smaller, and the larger being for one No. 30 to 80 black lead crucible. They are constructed with the greater part of the ash-pit below the floor level, yet with the grate bars high enough so that they can easily be poked from the under side. As the front of these furnaces is very low (even the larger size only 28 in. above the floor), the operator can handle a full pot easily. The top of the furnace is covered with a heavy cast-iron frame, to which the door is hinged. The door proper is the size of the inside of the furnace, and is a fire clay tile, which is clamped by a heavy skeleton door frame in such a manner that no iron work is exposed on the inside of the furnace. By means of angle irons and binding rods the furnace is securely bound.

The price of the furnace includes the fire clay tile, and the iron work necessary to erect the furnace; in fact, everything necessary except the red brick jacket, and the fire brick for the stack.

For one No. 12 to 20 Black Lead Crucible..... \$40.00

For one No. 30 to 80 Black Lead Crucible..... 50.00



929



930

Furnace Doors. See, also, Muffle Doors, 1197.

No.

929 **Furnace Doors**, heavy iron frame and door with fire clay lining, inside measurements, 11 in. high, 13 in. wide. This door has lugs on the frame, so that it is supported and clamped to place by the binding rods of the furnace, no anchor bolts being necessary.

Price \$4.50

Extra Fire Clay Lining50

930 **Furnace Doors**, with heavy iron frame and door without lining, inside measurements, 11 in. high, 13 in. wide. This door has four holes in the frame for anchor bolts.

Price Net 4.00

Note:—When ordered especially, this door can be lined with fire clay tile lining, the advance in price being 50 cents.

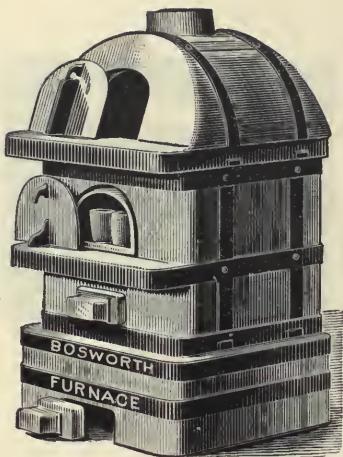


930b

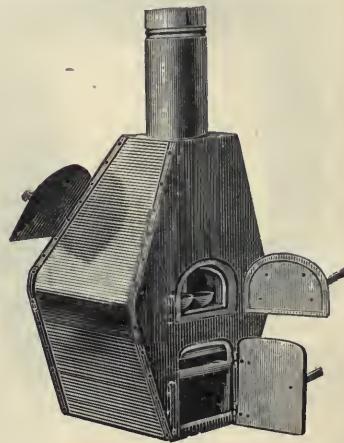
930b **Furnace Grate Bars**, of cast iron.

Length	12½	14	16	18	20	22	24	25	27	30 in.
Each	\$0.18	.20	.28	.30	.40	.45	.50	.55	.65	.70 Net

Note:—In estimating numbers required to cover fire box surface, figure each complete bar 2½ inches wide.
Above mentioned lengths are carried in stock.



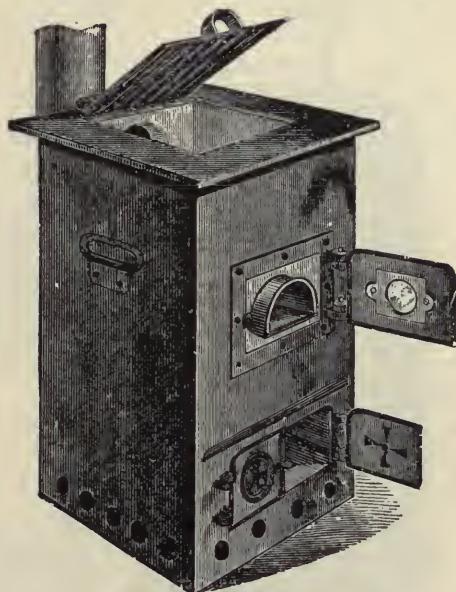
931



935

No.

931	Furnace, Assay, Bosworth's. For coke. Manufactured exclusively by The Denver Fire Clay Co. Made of fire clay, in three sections, for convenience in transportation. The sections are securely bound with heavy iron bands. Its construction is such that it is less liable to crack than other furnaces, much more durable and convenient, and it will do more work with less fuel (heating the muffle quickly and evenly) than any other furnace made.	
	For 9 x 15 in. muffle, with one LL muffle	\$40.00
932	Furnace. Same as above, for 10 x 16 in. muffle. With one I muffle	40.00
933	Furnace. Same as above, for 8 x 14 in. muffle. With one K muffle	35.00
934	Furnace Parts for Bosworth Furnace.	
	a. Extra Doors, iron, for feed or muffle opening.....	.75
	b. Extra Doors, clay.....	.50
	c. Extra Plugs, muffle support.....	.15
	d. Extra Plugs, poker.....	.25
	e. Extra Plugs, ash pit.....	.25
	f. Extra Grate Bars, each.....	.20
	g. Extra Grate Bars, set of 5.....	1.00
935	Furnace, No. 1 Assay, "Burro." Designed and manufactured exclusively by The Denver Fire Clay Company. A very complete and satisfactory portable furnace. It is made of fire clay, in one piece, and securely bound with steel; doors asbestos lined; weight 100 lbs., taking muffle 6 x 12 x 4 in.	
	With one muffle	25.00
937	Furnace, Extra Grate for No. 935.	Each 1.00



938-39

No.

938 **Furnace, Assay, Brown's**, made by **The Denver Fire Clay Company**, size 29 in. high, 16 in. wide by 14 in. deep; supplied regular with J muffle 4 x 6 x 12 in., but can also be supplied with G Muffle, 4½ x 7 x 12, if desired. The furnace is made to burn charcoal or coke. Crucible fusions can also be made in the open fire on top of the muffle, working through the feed door on top, if necessary; has sectional fire clay lining bound entirely with heavy sheet iron. All doors and hinges malleable iron lined with asbestos. This is an important feature, as cast doors are continually breaking. This is the most satisfactory prospecting coke furnace on the market, and, where necessary to carry on pack mules, any portion of the fire clay lining may be quickly removed to divide the weight.

Weight complete, packed for shipment with one muffle, 155 pounds..... \$25.00

939 **Furnace, Assay, Brown's No. 3**, same as above, except larger; supplied with LL Muffle 5¾ x 9 x 15—in size 33 in. high, 22 in. wide by 19 in. deep. Weight, complete, packed for shipment, 310 pounds. This is an extremely satisfactory furnace.

Price 35.00

Note:—All of the foregoing Bosworth, Burro and Brown Furnaces are for coke or charcoal only; no stove pipe is included with any of them. The Bosworth Furnace takes 6 in. pipe; the Burro and Brown Furnaces take 5 in. pipe. We can supply extra heavy pipe and elbows, made of No. 22 iron, in either 5 or 6 in., at 50c per joint, net.

GASOLINE BLOW PIPE OUTFITS



945

No.			
945	Furnace Blow Pipe No. 5, D. F. C. Co., for gasoline, equipped with a heavy steel tank of 8 gallons capacity; tinned inside and out to insure against rust, and tested to a pressure of 200 lbs.; detachable cast iron base, also fitted with large brass hand pump and pressure gauge, and supplied with 10 feet of $\frac{1}{4}$ -inch iron pipe, unions, elbows, etc., suitable to operate one, two or three burners at a time. This blow pipe is recommended for all sizes of gasoline furnaces, except the few smallest sizes, as it holds an all-day's supply of gasoline, and sufficient air space to carry a pressure from 15 to 40 minutes without pumping, depending on the number and size of the burners used; the best of material and workmanship throughout and thoroughly tested. Shipping weight, 75 lbs. Price, without burner.....	\$20.00	
945a	Furnace Blow Pipe No. 6, for gasoline. Similar to 945 with 15-Gallon Tank, large brass hand pump and pressure gauge. Supplied with 10 ft. of $\frac{1}{4}$ -in. iron pipe, unions, elbows, etc. Shipping weight, 90 lbs. Price, without burner.....	30.00	
945b	Furnace Blow Pipe No. 4, for Gasoline. Similar to 945, with 4-Gallon Tank and 4 feet of $\frac{1}{4}$ -in. iron pipe and pump, but without pressure gauge. Shipping weight, 60 lbs. Price, without burner.....	16.00	
945c	Furnace Blow Pipe No. 3, for gasoline. Similar to 945, with 2-Gallon Tank and 4 feet of $\frac{1}{4}$ -in. iron pipe and pump, but without pressure gauge. Shipping weight, 50 lbs. Price, without burner.....	14.00	
945d	Swivel Joints for above, extra.....	Each .75	
946	Furnace, Extra Pressure gauge, for indicating up to 50 lbs.....	2.00	
946a	Furnace, Extra Pump, with stand and stopcock, complete.....	6.00	
946b	Furnace, Extra Globe Valve	Each .75	

CASE GAS, GASOLINE OR CRUDE OIL FURNACES

(Patented)



THE principle of the CASE FURNACES is such that it works just as would a clean coke fire, giving an even temperature throughout, and, in a muffle furnace, heating the muffle close to the mouth. We have succeeded in heating a 16 x 24 inch muffle evenly, which is very much larger than has heretofore been attempted.

The consumption of fuel is comparatively small, and we have found that after once getting the furnace fairly heated (which can be done very quickly) the burner may be turned

down low, making quite a saving in the fuel.

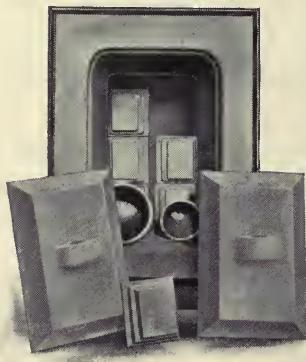
The muffle has a damper, by which a perfect oxidizing draught may be attained in the muffle when desired for the cupellation, or other oxidizing effects, and closed for quick heating. As all operators know this is a most vital point.

A special composition of fire clay is used in the manufacture of these furnaces. This mixture is a very poor conductor of heat, while the muffles we manufacture are very good conductors. Therefore nearly every one of the heat units developed inside the furnace are not conducted away by the furnace itself, but are conducted through the muffle and utilized where the heat is required. We also wish to mention that these furnaces are much lighter, as the composition is only two-thirds as heavy as the regular fire clay mixture.

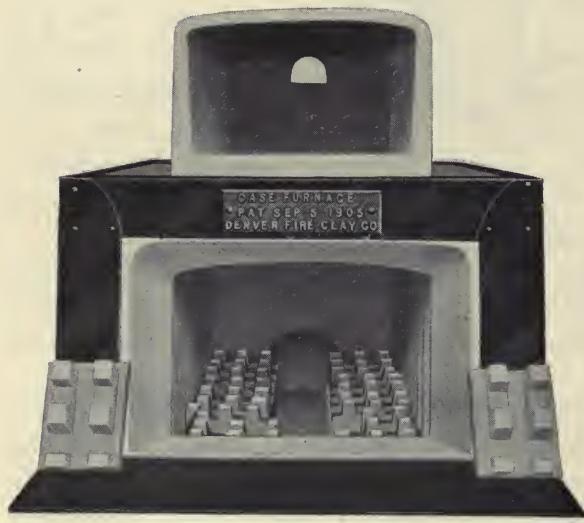
These furnaces are now being used in every locality in the world. We have sold a great number of them in the past, and they are giving universal satisfaction, rapidly supplanting the old style of furnaces.

PATENTED INNER CONSTRUCTION OF THE CASE FURNACES

The illustrations given herewith serve to some extent to show the inner construction of our various furnaces, each designed for its particular use and strictly on scientific principles. They have been examined and reported upon by the highest authorities, and upon request we will gladly furnish references of this nature.



A



B



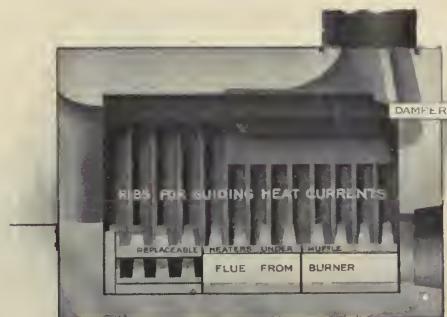
BB

"B" shows the inner construction of our muffle furnace, looking directly in, "BB" the muffle heater in detail, and "C" the same furnace in longitudinal section. Here the support of the muffle and the perfect distribution of the heat is provided for in the sectional removable sub-bottom, which is clearly shown in the latter illustration.

The many points of contact given by these replaceable muffle heaters, which they are technically termed, form an exceptionally good support for the muffle, while the openings between provide for an equal distribution of heat to all parts of the muffle bottom.

The vertical ribbed channels seen in the inner wall construction proportionally

increase in depth toward the front of the muffle, which lessens the resistance to the escape of heat in that direction, the consequence being that the front of the muffle to within $\frac{1}{2}$ inch of the door, is heated as perfectly as any other portion.



C

The sectional view also clearly shows the position of the dampers which govern the heat conditions in the muffle, allowing for an oxidizing effect to cupel or scoria, or closed, reducing condition for quick heating or fusions.

The whole construction is one of our patented designs and its efficiency in perfect utilization and small requirement of fuel is really phenomenal.



D



E

In figure "D" we illustrate the special features used in the construction of our combination crucible and muffle furnace. It differs in the combining of the two furnaces previously described, only in the design of the crucible stools shown at the back and in detail in figure "E." These have been designed to admit of less resistance to the passage of heat to the muffle in the front of the furnace and especially to prevent contact of the flame with the crucible before complete combustion has taken place, thereby practically doing away with the detrimental effects of incomplete combustion gases on clay crucibles so well known to operators of open fire fusion furnaces.

The crucible stools and muffle heaters are made in small sections, as in other types described, to permit of their being easily and cheaply replaced, and all the good points of preceding furnaces are here retained. The combination is a splendid type of scientific furnace construction and is fully covered by patent rights.

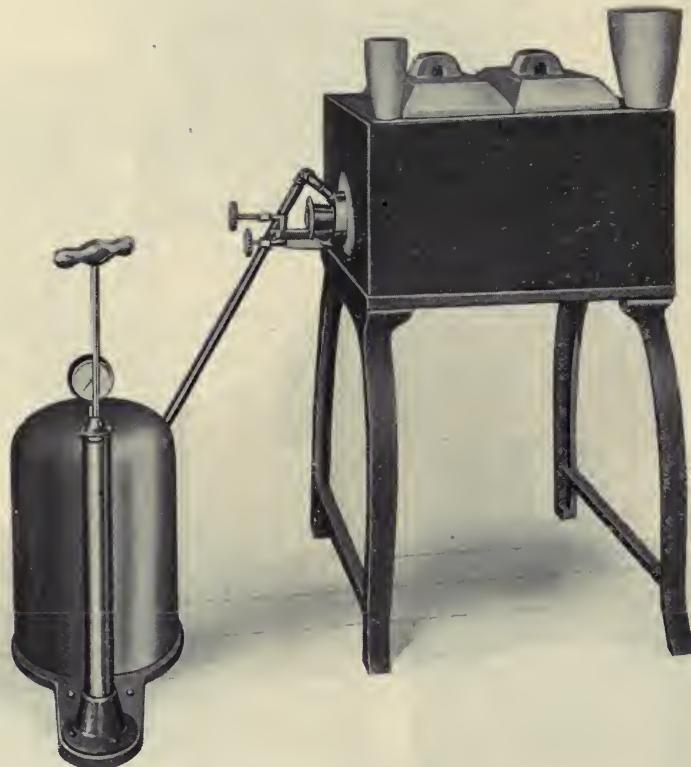
On the following pages we give an itemized description of capacity, burner required, weight, etc., of our entire line of furnaces. Inquiries regarding anything of a furnace nature, or other metallurgical clay goods, will be given our most careful attention and answered in the fullest detail.

We make furnaces for all purposes, such as drill sharpening, annealing and tempering and enameling. Write us your special requirements.

IMPROVED CASE CRUCIBLE FURNACES

For Gas, Gasoline and Crude Oil.

Patented.



Code Word, "Cacru."

No.
954

Improved Case Crucible Furnace No. 5. Capacity, 6 "J" Crucibles.

Net weight, 150 lbs.; gross weight, 210 lbs. \$40.00
Requires 2-inch Case Burner or equivalent.

Improved Case Crucible Furnace No. 6. Capacity, 8 "F" or 20 grammé crucibles.

Net weight, 120 lbs.; gross weight, 150 lbs. 40.00
Requires 1½-inch Case Burner or equivalent.

Improved Case Crucible Furnace No. 7. Capacity, 12 "F" or 20 grammé crucibles.

Net weight, 160 lbs.; gross weight, 215 lbs. 42.00
Requires 2-inch Case Burner or equivalent.

Improved Case Crucible Furnace No. 8. Capacity, 16 "F" or 20 grammé crucibles.

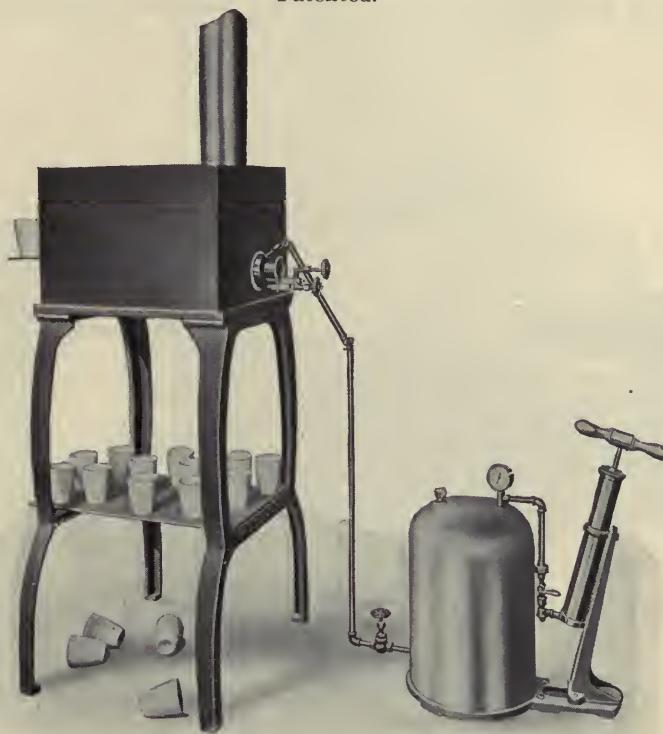
Net weight, 200 lbs.; gross weight, 240 lbs. 45.00
Requires 2¼-inch Case Burner or equivalent.

Prices include Furnace and Iron Stand.

IMPROVED CASE MUFFLE FURNACES

For Gas, Gasoline and Crude Oil.

Patented.



956

Code Word, "Camuf."

No.

956 Improved Case Prospector's Furnace No. 11. Size muffle, 6 in. x 6½ in.; capacity, 4-10 gramme crucibles.

Net weight, 39 lbs.; gross weight, 50 lbs.

Exterior dimensions: Width, 10 inches; height, 10 inches; length, 9 inches. This little furnace will be found very convenient where it is necessary to reduce bulk and weight to the minimum. Price without Iron Stand

\$15.00

Requires Case Midget Burner or equivalent.

Improved Case Muffle Furnace No. 12. Size Muffle, 6 in. x 10 in.

Net weight, 160 lbs.; gross weight, 190 lbs.

40.00

Requires Case Midget Burner or equivalent.

Improved Case Muffle Furnace No. 13. Size muffle, 8 in. x 12 in.

Net weight, 210 lbs.; gross weight, 260 lbs.

55.00

Requires 1½-inch Case Burner or equivalent.

Improved Case Muffle Furnace No. 14. Size muffle, 10 in. x 16 in.

Net weight, 290 lbs.; gross weight, 350 lbs.

60.00

Requires 2-inch Case Burner or equivalent.

Improved Case Muffle Furnace No. 15. Size muffle, 14 in. x 18 in.

Net weight, 400 lbs.; gross weight, 450 lbs.

80.00

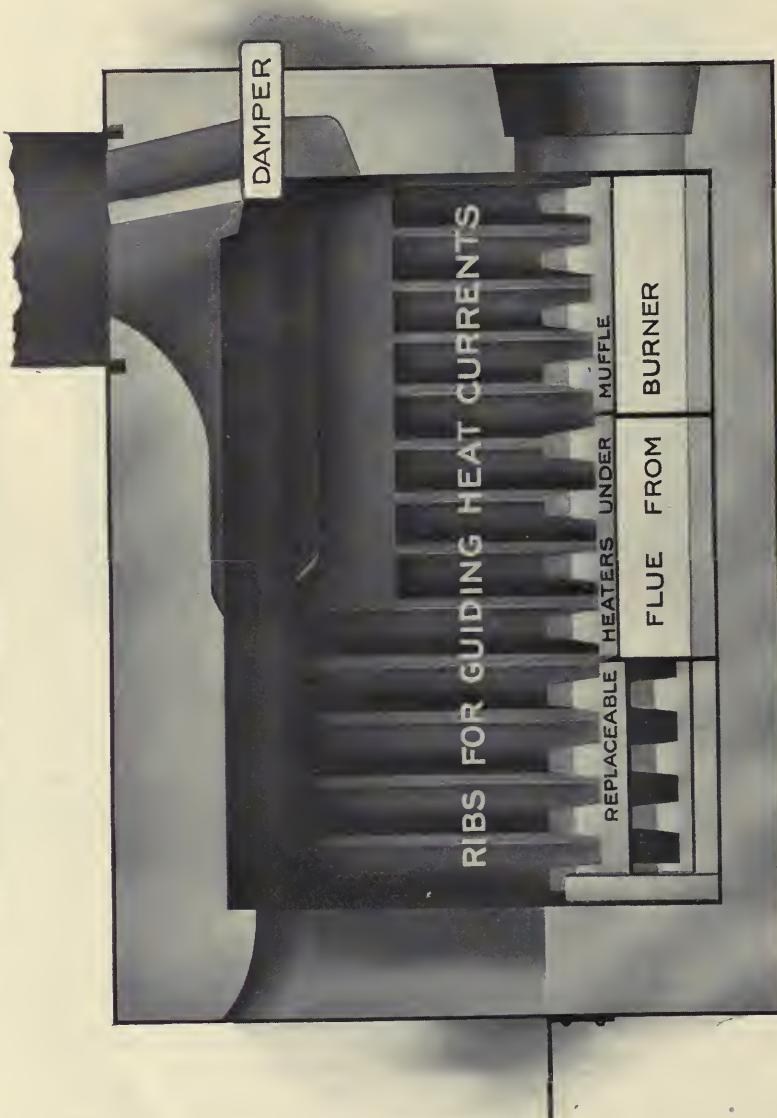
Requires 2¼-inch Case Burner or equivalent.

Note:—Our muffles for the Case Furnaces, owing to their shape, have a much greater capacity than ordinary muffles of the same dimensions.

Prices include Furnace and Iron Stand.

The Most Scientifically Constructed Furnace on the Market

Method of heating muffle evenly throughout, even to the very front.



View showing patented interior construction of Case Furnace.

IMPROVED CASE GAS MUFFLE FURNACES

Patented.



Code Word,
"Cagas."

957

In this Muffle Furnace we have combined all features most desired by practical assayers and metallurgists.

It uses a 10 x 16 in. muffle with high sides, which will hold 15 20-gramme crucibles, or any other Case Furnace regardless of size or style.

It can be started from cold, and be ready for work in thirty minutes, and will easily maintain a temperature of 2500 degrees Fahrenheit on a gas consumption of 90 ft. per hour or less, and may be operated on any kind of gas. Actual cost of operation as demonstrated on \$1.00 gas about 7½ to 8 cents per hour.

The perfectly even heat obtained in all parts of the muffle enables one to "feather" cupels and secure the desired uniform results.

All parts of the muffle can be supplied with air by means of a damper and perfect oxidation secured, while cupellation is rapid and complete.

It is well ventilated, and the flue is under perfect control, carrying off all fumes or odors.

The entire furnace lining is made of the best fire clay in two pieces, and is enclosed in a substantial sheet iron jacket. The muffle may be removed and replaced without disturbing any other parts.

The furnace is mounted at an easy working height, on a substantial stand, to which the blower and motor are attached, making a complete, self-contained outfit, which occupies but little space, can be set up in any convenient place, and is easily portable.

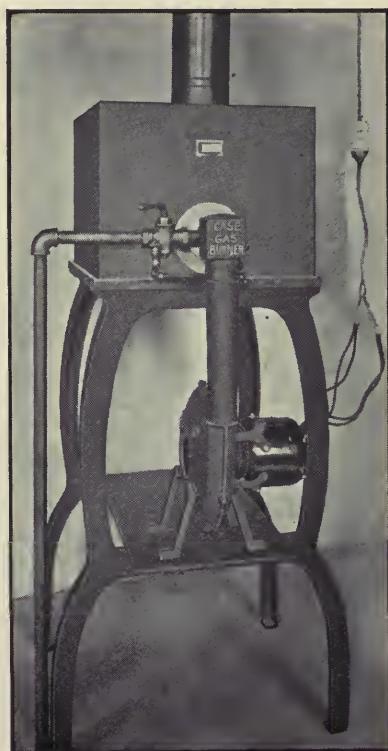
The electric motor can be furnished for any lighting circuit, and requires about the same current as a 16 C. P. lamp.

We believe this is the best combination yet offered to assayers and chemists, and is a very desirable appliance for any shop or laboratory.

Height, 54 inches. Weight, 500 lbs. Floor space, 24 x 28 in.

Price, packed for shipment, from \$100.00 to \$150.00, depending on furnace selected.

ELECTRIC FAN BLOWER



957

This direct connected and self-contained soft blast Improved Blower meets the wants of many small manufacturers who require a moderate blast of steady, uniform pressure, that is always available at slight expense.

It may be connected to an ordinary lamp socket, as it runs on any light or power circuit, and at a cost of less than one cent per hour.

The fan blades are 12 inches in diameter, the blast pipe is 2 inches in diameter, and it delivers 2,000 cubic feet of air an hour, at 15-10 inch pressure.

It has a strong cast iron frame, which may be set either vertically or horizontally, as the legs are adapted to any of four positions.

The motor is well enclosed and protected from dust or other injury, has self-oiling bearings, is very durable, and requires practically no attention.

A blast gate should be used to control the air, and when this is closed very little electric current is required.

In ordering, state voltage; whether direct or alternating current and cycles.

BURNER.

Case Patent Soft Blast Burner, which burns any city gas or natural gas. The only Burner operated with a soft blast that is an absolute success, the gas supply being regulated by a large cock with graduated dial.

IMPROVED CASE FURNACE OPERATED BY GAS

We wish to advise we mount all kinds and sizes of Case Furnaces on stands of this character and also burners and blowers of every size to suit.

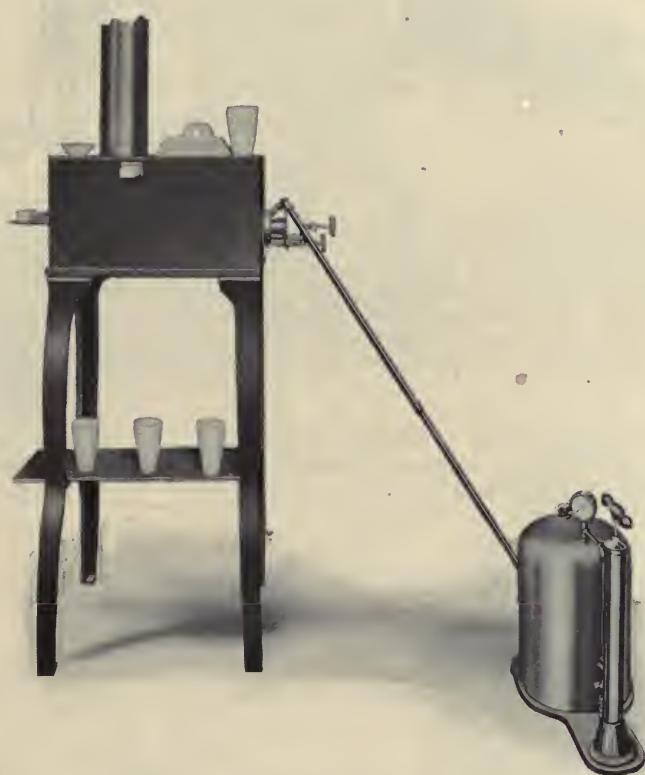
In the event you are interested in Gas Furnaces, it will undoubtedly pay to get our prices, on any equipment you may select, before buying. We also manufacture Furnaces for annealing and tempering.

IMPROVED

CASE COMBINATION FURNACES

(For Gas, Gasoline and Crude Oil.)

Patented.



Code Word, "Cacomb."

No.

958	The Improved Case Combination Furnace No. 30. Size muffle, 6 in. x 8 in. Capacity 2 "G" or 20 gramme crucibles. Net weight, 190 lbs.; gross weight, 225 lbs.	\$45.00
	Requires Case Midget Burner or equivalent.	
	The Improved Case Combination Furnace No. 31. Size muffle, 6 in. x 8 in. Capacity 4 "G" or 20 gramme crucibles. Net weight, 210 lbs.; gross weight, 250 lbs.	50.00
	Requires 1½-inch Case Burner or equivalent.	
	The Improved Case Combination Furnace No. 32. Size muffle, 6 in. x 8 in. Capacity 8 "F" or 20 gramme crucibles. Net weight, 225 lbs.; gross weight, 280 lbs.	55.00
	Requires 2-inch Case Burner or equivalent.	
	Prices include Furnace and Iron Stand.	

CASE MELTING FURNACE



970



974

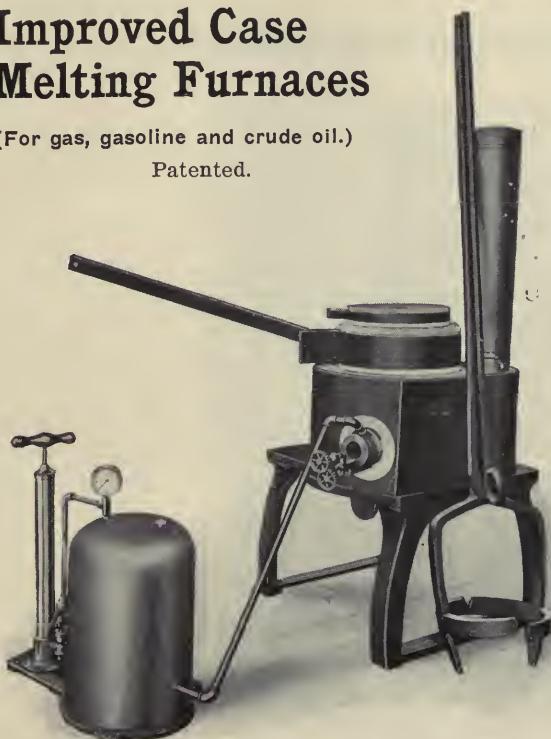
The flame blow-in is located so that the flame blows in on a tangent and does not hit the crucible until there is complete combustion. The hot gases circle around the crucible, thereby preventing the loss of crucible by cracking, and saving the wear and tear on same to such an extent that you are able to get from three to four extra melts out of each crucible. This Furnace practically divides in the center, so when the cover is lifted off it leaves the upper portion of the crucible so exposed that one can lift same out by tongs, which renders it less liable to the strain caused by the usual method of lifting.

No.			
970	Case Melting Furnace No. 1 (gas only) complete	\$ 4.00	
	Taking No. 1 black lead, small nest Hessian sand or Denver Fire Clay Company's crucibles up to 20 gramme. Net weight, 7 lbs.; shipping weight, 10 lbs.		
	Parts:—Furnace body.....	.75	
	Furnace body and cover.....	1.10	
	Burner alone.....	1.50	
	Stand, without burner.....	.90	
970a	Case Melting Furnace No. 2 (gas only), complete	5.00	
	Taking No. 3 black lead, or large nest Hessian sand or Denver Fire Clay Company's crucibles up to G. Net weight, 20 lbs.; shipping weight, 27 lbs.		
	Parts:—Furnace body	3.25	
	Furnace body and cover	4.00	
	Burner alone	1.50	
970b	Case Melting Furnace No. 3 , without burner	8.00	
	Requires Midget Burner.		
	Taking No. 7 black lead crucibles. Net weight, 40 lbs.; shipping weight, 50 lbs.		
	Parts:—Furnace body	7.00	
	Furnace body and cover	8.00	
	Midget Burner alone	6.00	
970c	Case Melting Furnace No. 4 , without burner.....	12.00	
	Taking No. 16 black lead crucibles. Net weight, 100 lbs.; shipping weight, 130 lbs. Requires Midget burner.		
974	Furnace, Erdmann's. Of fire clay for gas; complete, with burner and tripod.	1.00	
975	Furnace, Erdmann's. Fire clay cylinders, alone.....	.25	

Improved Case Melting Furnaces

(For gas, gasoline and crude oil.)

Patented.



sable to amalgamation mills. Fitted with gas or oil burners if desired.

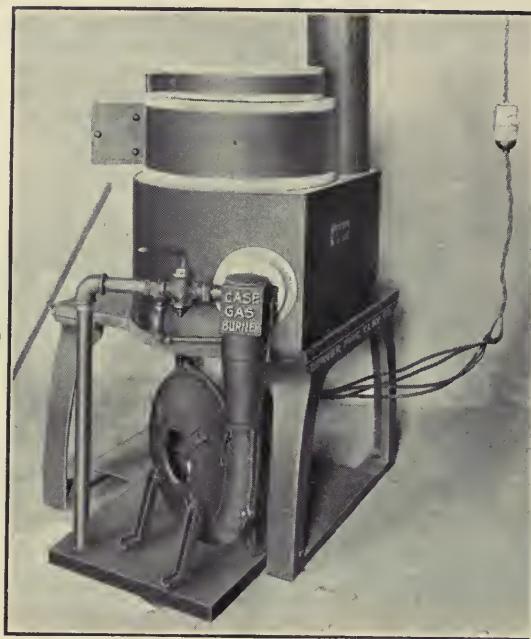
The flame blow-in is located so that the flame enters the furnace on a tangent and does not hit the crucible until there is complete combustion. The hot gases circle around the crucible, thereby preventing the loss of crucibles by cracking, and saving their wear and tear to such an extent that their life is lengthened several melts. This furnace is made in three sections, or practically divides in the center, so when the upper ring is lifted off it leaves the upper portion of the crucible so exposed that it can be removed with basket tongs.

The illustrations show the Furnace ready for bullion melting and also as used for retorting amalgam, using a special fire clay ring in which the Nevada style of retort fits. It is the most efficient and convenient Furnace for retorting and melting bullion yet devised, and indispen-



Code Word,
"Cabu."

Case Patented Furnaces

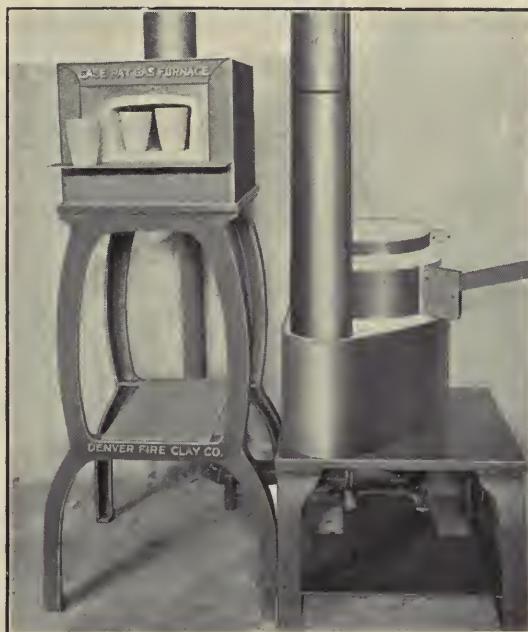


Case Bullion Furnace fitted with Case Patent Gas Burner, and Improved Soft Blast Blower, showing how crucible is exposed for easy lifting by removal of ring immediately beneath cover.

Fitted with gasoline or oil burners if desired.

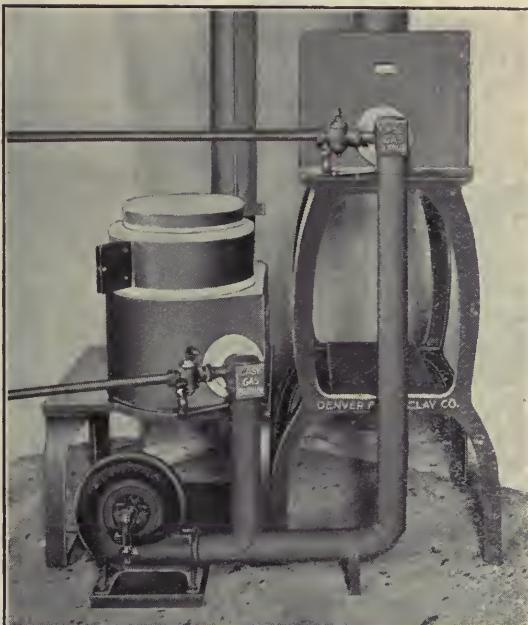


Case Patented Furnaces



Illustrating Muffle and Bullion furnaces with Case Patent Gas Burners, both connected to one Blower.

We furnish Blowers for operating any number of burners up to ten in one battery, in which one or more can be isolated at any time if desired.



IMPROVED CASE MELTING FURNACES

(For Gas, Gasoline and Crude Oil.)

Patented.

Code Word, "Cabu."

No.

980 **Bullion Furnace, No. 20.** Holds black lead crucible No. 7.
 Crucible compartment, Weight, packed for shipment
 Diameter, 6 inches; depth, 9 inches. 150 pounds.....Price \$32.00
 Requires Case Midget Burner.

980 **Bullion Furnace, No. 22.** Holds black lead crucible No. 25.
 Crucible compartment, Weight, packed for shipment
 Diameter, 10 inches; depth, 13½ inches. 230 pounds.....Price 38.00
 Requires 2-inch Case Burner.

980 **Bullion Furnace, No. 23.** Holds black lead crucible No. 45.
 Crucible compartment, Weight, packed for shipment
 Diameter, 13 inches; depth, 17 inches. 420 pounds.....Price 45.00
 Requires Case Burner, 2¼ inches.

980 **Bullion Furnace, No. 24.** Holds black lead crucible No. 80.
 Crucible compartment, Weight, packed for shipment
 Diameter, 18 inches; depth, 19½ inches. 750 pounds.....Price 60.00
 Requires two Case Burners, 2¼ inches.

980 **Bullion Furnace.** Holds black lead crucible No. 100.
 Requires two Case Burners, size 2½ inches. Net weight, 750 lbs.; packed
 for shipment, 980 pounds.. 80.00



980a

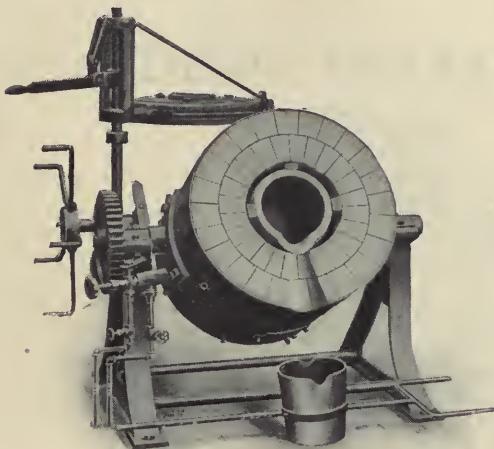


980b

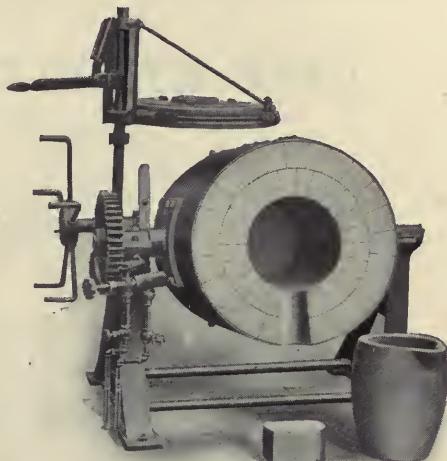
980a **Stool** on which crucible rests in furnace \$0.50

980b **Bullion Mixer**, of clay, in use at U. S. mints for perfectly mixing bullion immediately before pouring. Bars are much more homogeneous, giving better samples for assay 2.00

STEELE-HARVEY TILTING FURNACE



Pouring Position



981a

Component Parts



In Melting Position

CRUCIBLE TILTING FURNACES—STEELE-HARVEY.

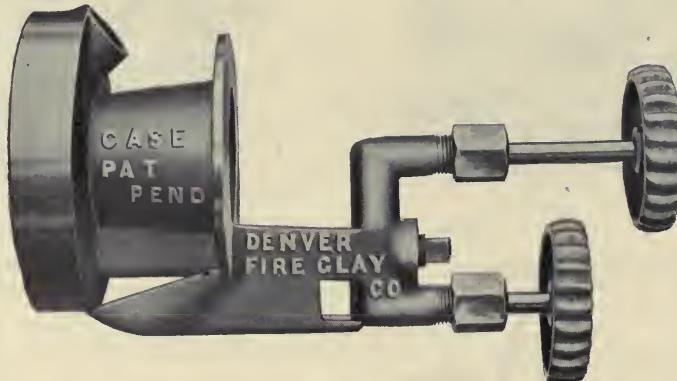
Furnaces, especially adapted to the use of melting and refining metals, cyanide precipitates, etc. Burns crude oil or distillate; clean, easily operated, economical. Crucible remains constantly in furnace, which means a saving of 40% in the life of each crucible. Takes regular shaped Dixon Crucible as follows:

Shipping weight.	Furnace No.	Size of crucible.	Floor space required.
1700 Lbs.....	40	40	4'7" X 3'3"
1800 "	60	60	4'9" X 3'3"
2000 "	125	125	5' X 3'6"
2900 "	275	300	5'3" X 3'6"
	450	Special size, very large.	

If interested, write for special Catalogue and further information.

CASE HYDRO-CARBON BURNER

Patent Pending.



982

Code Word, "Caburn."

We have recently perfected a burner for high grade distillates in the construction of which we have been able to eliminate all the unsatisfactory features of the earlier types of burners. For six months prior to putting it on the market we have been testing it out under all possible conditions, until we are now prepared to say nothing approaches it for small fuel consumption, absence of possible leaky plugs, no "back-firing," and absolute reliability under varied conditions has ever been devised. Among the advantages of its improved construction we may mention:

COMPACTNESS.

By an original design apparent from the above illustration we have been able to shorten the length fully one-half from that of any other make of similar capacity. This is accomplished by constructing the mixing chamber a truncated cone with the flare toward the valve, enabling a sufficient supply of air to become thoroughly mixed with the vaporized gasoline in a very short distance. The Case burner weighs but two-thirds as much as other makes of similar size.



VALVE.

All burners heretofore have been constructed with a "Needle" valve, which is constantly wearing a larger orifice, appreciably shortening the life of the burner, as this opening can never again be reduced. We have entirely disregarded all other valve constructions and have succeeded in producing a non-leakable, non-wearing valve.

The complete closing of the valve is accomplished by the meeting of the shoulder on the valve stem and the seat, which are planed surfaces, to make a perfect juncture, and no matter how tightly the valve stem is screwed up no damage to the opening through which the gas or gasoline is forced can result.

The regulation of the flow is accomplished by constructing in the channel between the valve seat and the opening through which the gas is emitted, of a groove whose cross-section increases proportionately as the valve is opened. The groove is so constructed that the gas on passing through it is reflected from the upper surface of this channel, this surface being exactly perpendicular to the plane of the front of the burner and perfectly centering the opening into the furnace, forcing the flow of gas directly through the center of the burner.

In comparing the illustration of this burner with those of other manufacturers attention is respectfully called to the few joints in its construction, minimizing the possibility of leaks, which are always such an annoying feature to the operator.

In fuel consumption the Case burner of equal size requires but three-fourths as much as any other burner on the market to produce the same number of heat units. In conclusion, we have withheld the introduction of our burner until all possible eliminations of the difficulties previously experienced in the operation of Hydro-Carbon burners could be accomplished. How well we have succeeded will at once be apparent upon a trial of this burner.

BURNERS, CASE HYDRO-CARBON.

Dia.	1½	1¾	2	2¼	2½ in.
Each	\$10.00	11.00	12.00	13.50	15.00

BURNERS

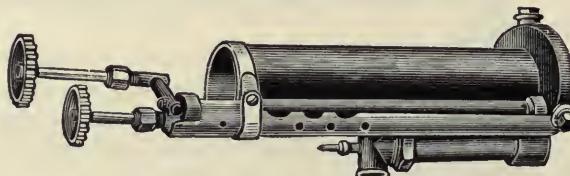


Code Word, "Midget."

No.

983 Burners, Case "Midget." This burner is undoubtedly the most efficient, small, low-priced burner on the market.

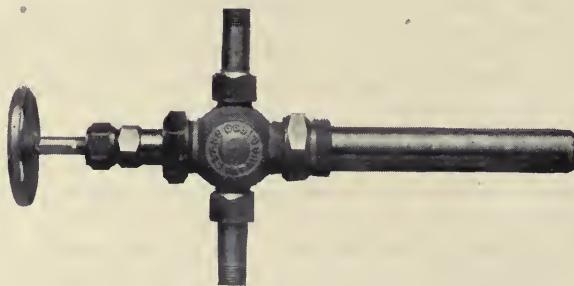
We would call your attention to its compactness and to the generating valve, and would mention that it has a generating pan (for starting burner), which is not generally given as part of burner at this price. Burner complete \$6.00



984

984 Burners, "Cary," Hydro-Carbon.

Dia.	1 1/4	1 1/2	1 3/4	2	2 1/4 in.
Each	\$10.00	11.00	12.00	13.50	15.00 Net.



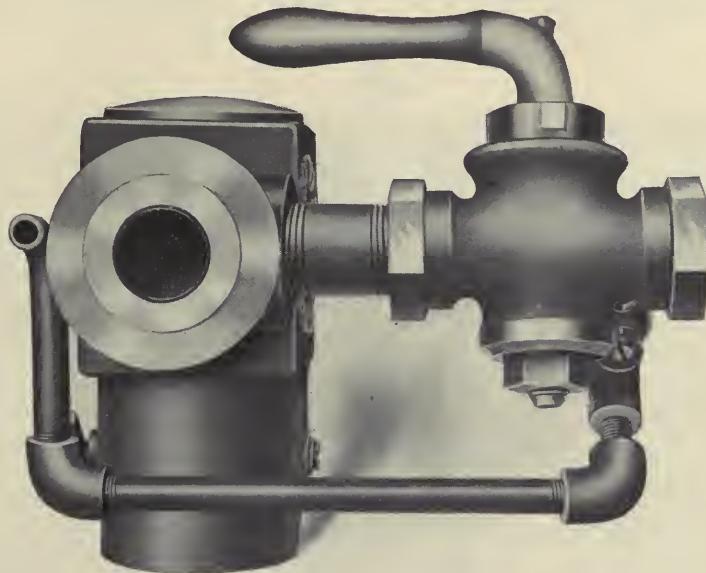
985

985 Oil Burner, Billow. Can be used with equal effect with steam, air from high-pressure compressor, or low-pressure positive blast blower. Atomizes oil economically and with perfect regulation. Will not choke or clog or admit of wasteful use of steam, air or oil. Especially adapted to use with Case and tile lined muffle Furnaces.

Price	\$25.00
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CASE GAS BURNERS

Patented.



987

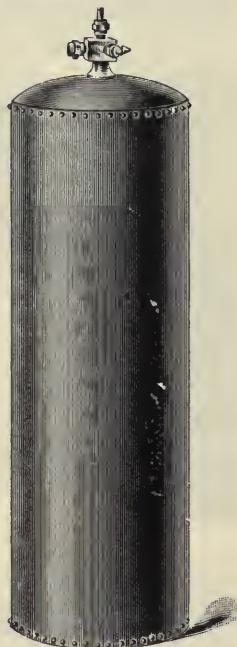
Code Word, "Cagab."

No.

987 Case Patented Soft Blast Gas Burners. The only burner designed to burn gas with a soft or positive blast blower. Burner fitted with pilot light and dial cock for gas, and butterfly valve for air.

Price \$15.00

GASES



993 and 994

No.

990	Ammonia Gas, Anhydrous Ammonia, liquefied in 50 and 100-lb. cylinders	lb.	\$ 0.50
	Cylinders	Each	25.00
991	Carbonic Acid, liquefied, in 18-lb. cylinders.....	lb	.25
	Cylinders	Each	10.00
992	Chlorine Gas, liquefied, in cylinders of 125 lbs.	lb	.50
	Cylinders	Each	45.00
993	Hydrogen Gas, compressed, under 225 lbs. pressure	Cubic foot	.05
994	Oxygen Gas, compressed, under 225 lbs. pressure.....	Cubic foot	.20
	Cylinders for 993 and 994, tested to 600 lbs. and guaranteed with double needle valve.		
	Capacity 15 25 35 40 50	Cubic feet.	
	Each \$20.00 22.00 24.00 26.00 30.00		
995	Oxygen Gas, pure, compressed, in small cylinders, as used in Mahler's Cal- orimeter, etc.	Gallon	.10
	Cylinders, of 100 gallons capacity, filled		20.00
	Yoke connection for cylinder		1.25

GLASS BLOWING DEPARTMENT



A CORNER OF THE GLASS BLOWING DEPARTMENT OF THE DENVER FIRE CLAY COMPANY.

Our department for the manufacture and repair of glass apparatus is the most completely equipped in the West and there is no phase of this work that we are not fully prepared to handle.

We manufacture and carry in stock a very large line of thermometers and hydrometers and can supply anything of a special nature that might be required, upon receipt of sketch or specification.

All metal case thermometers of ours or other make can be repaired by sending the broken thermometer to us, and all damaged or broken glass apparatus, regardless of its nature or use, can be repaired by this department at a reasonable cost.

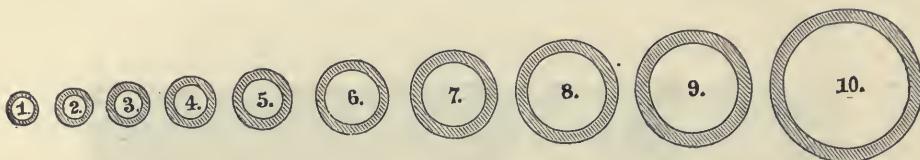
The material we use in making new apparatus or in repair work is the very best German Glass imported by us direct and our workmen are the most skilled we are able to secure.

Those who, heretofore, have found it necessary to send farther East or to Europe for special articles of glass will find this department at once a time and money saver—our quality of goods and workmanship cannot be excelled and our advantageous location must appeal to anyone to whom time is an object either in repairing apparatus in constant use or making up something new, which may be immediately required.

Many Universities, Schools and Custom Analytical Laboratories have damaged or broken apparatus which are of no use to them in that condition and unavailable for the purpose for which they were purchased. We beg to call their attention to the fact that very frequently these can be expressed to us with safety, repaired and returned at a saving of from 50 to 75% of cost of replacing with new apparatus.

Send in your Burettes for repairs.

GLASS TUBING



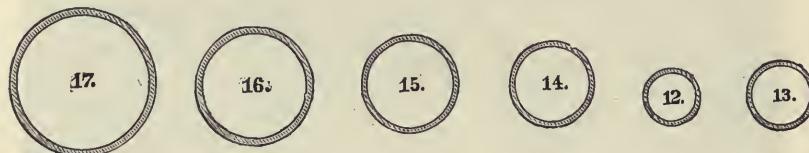
1001

Best German, lead free, made expressly for chemical use, for glass blowing and fitting up chemical apparatus, being strong and elastic. In lengths of 5 ft.

No.

1001 Glass Tubing, medium wall.

Size from 3 to 20 mm. external dia.	Ib	\$0.50
Size from 21 to 50 mm. external dia.	Ib	.60
Size from 51 to 65 mm. external dia.	Ib	.75



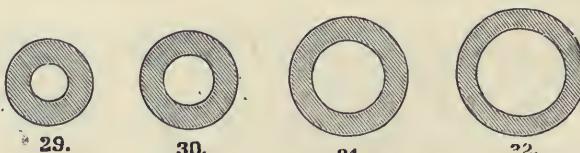
1002

1002 Glass Tubing, light wall. Same prices as No. 1001.



1003

1003 Glass Tubing, barometer. From 7 to 10 mm. external dia.	Ib.	.75
1004 Glass Tubing, capillary. From 2.5 to 5 mm. external dia.	Ib.	1.00
1005 Glass Tubing, combustion. Hard Jena glass	Ib.	.75
1006 Glass Tubing, combustion. Small sizes for blowpiping and Marsh's arsenic test	Ib	1.00

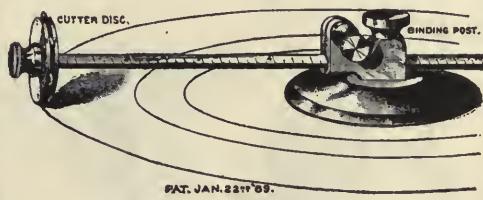


1007

1007 Glass Tubing, gauge. Well annealed, from 6 to 20 mm. external dia.	Ib.	.75
1008 Glass Tubing, gauge. Cut in any length to order	Ib.	1.00



1011a

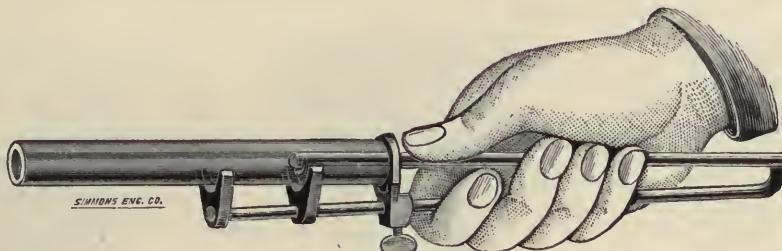


PAT. JAN. 22, 1903.

1011b

No.

1011 Glass Beads, solid. For surface-extending medium in absorptions lb. \$1.20
 1011a Glass Cutter, for tubing, Griffin's, made of nickel-plated brass.....Each 1.00
 Extra steel wheels20
 1011b Glass Cutter, rotary, for cutting large circles. Cutter disc at end of gradu-
 ated arm contains 6 wheels. Mounted on brass base with rubber
 bearing on under side Price 3.00



1012

1012 Glass Cutter, for tubing. Will cut any length up to 10 in. \$ 1.25
 1012a Glass Cutter, steel wheel, for plates25
 1013 Glass Plates, square. Light, ground on one side.

Size	2	3	4	5	6	8	10	12 in. sq.
Each	\$0.03	.04	.05	.07	.10	.15	.25	.30

1014 Glass Plates, square. Heavy, plate glass, ground on one side.

Size	3	4	5	6	8	10	12	15	20 in. sq.
Each	\$0.10	.15	.20	.25	.40	.60	1.00	1.50	2.50

1015 Glass Plates, square, blue colored glass.

Size	2x2	3x3	4x4	5x5	6x6 in.
Each	\$0.05	.06	.08	.12	.15

1016 Glass Powder lb. .10
 1017 Glass Rods. Lead free glass, in 5-feet length. Give dia. in ordering ... lb. .50
 1018 Glass Stirrers. Ends rounded, lead free glass.

Length	4	5	6	8	10	12	18 in.
Dia.	1/8	3-16	1/4	1/4	5/8	5-16	1/2 in.
Ib.	\$1.00	1.00	.75	.75	.60	.60	.60
Doz.	.25	.30	.40	.60	.80	1.00	2.00

1019 Glass Wool. Of Bohemian glass, finest, for filtration oz. \$0.60; lb. 8.00



1020



1021



1022



1023



1024a

NO.

1020	Gloves, Asbestos, with thumb and finger	Pair	\$3.50
1021	Gloves, Asbestos, Mittens	Pair	2.75
1022	Gloves, Black Rubber. Acid proof. For protecting the hands in handling acids, nitrate of silver, etc.		

Size	Short	Half Long	Short	Half Long	H'vy Driving
No.	10 to 12	10 to 12	13	13	13
Gauntlet	none	4 in	none	4 in.	5 in.
Pair	\$1.25	1.50	1.40	1.65	2.00

1023	Gloves, White Rubber. For smelters, in use in chlorination and cyanide works, etc. No. 13, with 9-in. gauntlet	Net	\$3.50
1023a	Gloves, White Rubber. No. 13, 21-in. gauntlet	Net	6.00
1024	Goggles, for protecting the eyes, colored glass	Pair	.15
1024a	Goggles, Covers', made of a single piece of pure rubber; fit anybody; air tight	Price	1.50
1025	Gold Pans, Miners' "New Hit," Patented, 16 $\frac{1}{4}$ in. x 2 $\frac{3}{8}$ in. A great time saver, and of especial value to the inexperienced miner.....		2.00

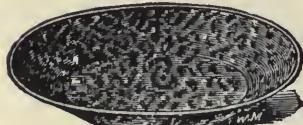


1031



1032

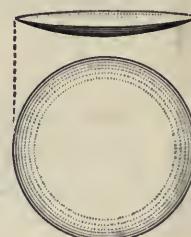
1031	Gold Pans, Miners' polished steel, 16 in. dia., 2 $\frac{3}{8}$ in. deep .....	.50
1032	Gold Pans, Miners', polished steel, with copper bottom. 16 in. dia., 2 $\frac{3}{8}$ in. deep	3.00
1032a	Gold Pans, Miners', all copper. 16 in. dia., 2 $\frac{3}{8}$ in. deep	2.50



1033



1034-5



1035a

1033	Gold Pans, Miners', agate or graniteware. 16 in. dia., 2 $\frac{3}{8}$ in. deep.....	\$1.25
1034	Gold Pans, Miners', aluminum. 15 in. dia., 2 $\frac{3}{8}$ in. deep	2.00
1035	Gold Pans, Miners', aluminum. 12 in. dia., 2 in. deep	1.50
1035a	Gold Pans, Richard's, Vanning Plaque, of enameled iron	1.00



1036-40

No.

1036	Gold Washing Horns, miners'. Of plain horn, unpolished, best quality.....	\$0.75
1037	Gold Washing Horns. Of black polished buffalo horn	1.00
1038	Gold Washing Horns. Of hard rubber, black .....	.75
1039	Gold Washing Horns. Of copper	1.00
1040	Gold Washing Horns. Of steel, polished .....	.40



1042



1042a



1044a

1041 Graduates, glass, cone shape. Guaranteed accurate.

Capacity	1 dram	2 drams
Capacity	60 minims	120 minims
Each	\$0.25	.30

1042 Graduates, glass, graduation in ounces.

Capacity	1/2	1	2	4	8	16	32 oz.
Each	\$0.15	.18	.20	.25	.35	.60	.90

1042a Graduates, glass, conical graduation in grammes.

Capacity	25	50	100	150	200	250	500	1000 gms.
Each	\$0.35	.40	.50	.60	.70	.80	1.00	1.80

1043 Graduates, glass, double graduation, in grammes and ounces.

Capacity	1	2	4	8	16	32 oz.
Capacity	30	60	125	250	500	1000 grms.
Each	\$0.30	.40	.60	.80	1.20	2.00

1044a Graduates, glass. Beaker form, flat bottom, without foot, lessening the liability of breakage.

Capacity	1	2	4	8	16	32 oz.
Each	\$0.20	.25	.30	.35	.50	1.00

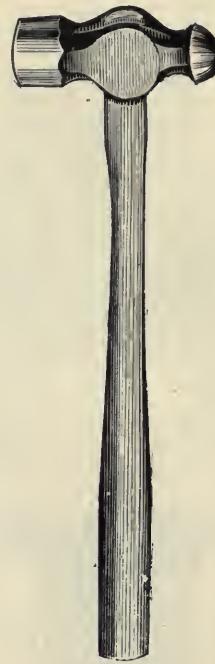
HAMMERS



1047



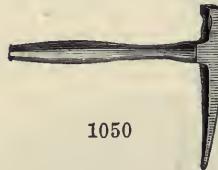
1046



1049



1045

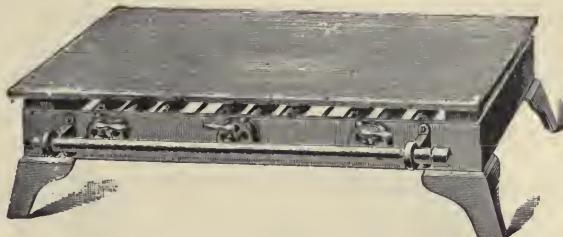


1050

No.						
1045	Hammers, blow pipe, Plattner's.	Nickel-plated, with wire handle				\$0.60
1046	Hammers, slagging.	Of superior "Hammond" cast steel.				
	Weight	8 oz.	13 oz.	1 lb.	1 lb. 3 oz.	1 lb. 7 oz.
	Each	\$0.50	.55	.60	.65	.75
1047	Hammers, Donaldson's.	Same as No. 1046, for cleaning slag anvil, with brush $2\frac{1}{4}$ x $\frac{1}{2}$ inch, attached to one side of pole by screws.				
	Weight	1 lb.	1lb. 3 oz.	2 lbs. 2 oz.		
	Each	\$1.25	1.50	1.75		
1048	Hammers, Extra Brushes,	for above .....				.50
1048a	Hammers, Striking.	For breaking up large samples, double pole....	Each			1.00
1049	Hammers, ball pein.	Best cast steel.				
	Weight	12 oz.	1 lb.			
	Each	\$0.75	1.00			
1050	Hammers, Prospecting Picks.					
	Pick length	7	8 in.			
	Each	\$1.25	1.40			

HOT PLATES

FOR GAS



1050a

No.

1050a Hot Plate. For use with gas, giving even temperature to all parts of the plate.

Size	18x14	18x22	18x30 in.
Each	\$10.00	15.00	20.00

1050aa Hot Plate, as above, for use with gasoline gas.

Size	10x18	14x18	18x25	18x36 in.
Each	\$9.00	12.50	20.00	30.00

ELECTRIC LABORATORY PLATES

These plates are specially designed and adapted for use in the laboratory.

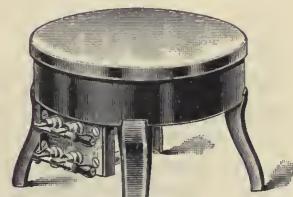
All the plates are arranged for heat regulation, and are furnished complete, ready for attachment to circuit, no cord being supplied, as the main line wires are usually run directly to the plates and connected with the binding posts.

Made for various intermediate voltages, 0 to 250.

Voltages must be specified when ordering.



1050b



1050c

1050b Hot Plate, Electric, arranged for three heats, from 100° to 600° F.

12x18	12x24	18x24	18x30 in.
\$25.00	35.00	60.00	70.00

1050c Hot Plate, Electric, Round.

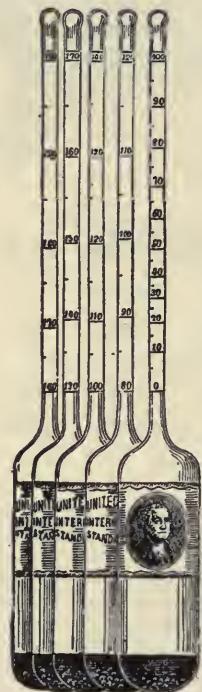
8 in. diameter, 3 heats	\$14.00
10 in. diameter, 3 heats	16.00
12 in. diameter, 3 heats	18.00

HYDROMETERS

Special hydrometers made to order in our own glass blowing department.



1051



1064



1068



1085

No.

1051	Hydrometers, Acid and Heavy Liquids, Beaume, 0 to 70 in 1-1°.....	\$0.50
1052	Hydrometers, Acid and Heavy Liquids, Beaume, 0 to 90 in 1-1°.....	.75
1053	Hydrometers, Acid, Beaume 0 to 30 in ½° .....	.60
1054	Hydrometers, Acid, Beaume, 30 to 60 in ½° .....	.60
1055	Hydrometers, Acid, Beaume, 60 to 66 in 1-10°	1.50
1056	Hydrometers, Alcohol, proof and Tralle scale .....	.60
1056a	Hydrometers, Alcohol, Tralle scale 4 in. long, for small quantities	1.00

Note:—The Specific Gravities of all liquids are referred to distilled water as a standard, the unit of comparison being 1,000 grains of distilled water at a temperature of 60° Fahrenheit. The inconvenience of measuring and weighing like bulk of liquids led to the construction of the Hydrometer, its principle of operation being that of the law of floating bodies, i. e., that when a body floats, the weight of the bulk of liquid displaced is equal to the weight of the body floated.

The scales for general use, Twaddle's and Beaume's are the most conspicuous;

No.			
1057	Hydrometers, Alcohol, proof and Tralle scale, with thermometer, U. S. Custom House standard, with mark 100 below and 100 above proof..	\$1.50	
1058	Hydrometers, Alkali and Heavy Liquids, Beaume scale, 0 to 50 in 1-1°.....	.50	
1059	Hydrometers, Ammonia and Light Liquids, Beaume scale, 40 to 10 in 1-1°..	.50	
1060	Hydrometers, Battery, Beaume scale.....	.50	
1060a	Hydrometers, Battery, flat bulb, short, for storage batteries.....	.80	
1060b	Hydrometers, Battery, with points, Beaume and specific gravity, scale 1.100 to 1.400	1.00	
1061	Hydrometers, Cider, Beaume scale.....	.50	
1062	Hydrometers, Coal Oil, standard, as adopted by U. S. Petroleum Association; Beaume scale, 10 to 90 in 1-1°.....	.50	
1063	Hydrometers, Coal Oil, with thermometer, standard, as adopted by U. S. Petroleum Association; Beaume scale, 10 to 90 in 1-1°.....	1.50	
1064	Hydrometers, Coal Oil, standard as adopted by U. S. Petroleum Association; 10 to 20, 20 to 30, 30 to 40, 40 to 50, 50 to 60, 60 to 70, 70 to 80, 80 to 90, divided in 1-10°.....Each	2.50	
1065	Hydrometers, Glucose, 0° to 5° in 1-1°.....	1.00	
1066	Hydrometers, Light Liquids, Beaume scale.....	.50	
1067	Hydrometers, Light Liquids, Beaume and specific gravity scale, 0.700 to 1.000	1.00	
1068	Hydrometers, Light Liquids, with thermometer, Beaume and specific gravity scale	1.50	
1069	Hydrometers, Light Liquids, standard, 0.700 to 0.800, 0.800 to 0.900, 0.900 to 1.000 .....,Each	1.00	
1070	Hydrometers, Light and Heavy Liquids, universal, 0.700 to 2.000.....	1.50	
1071	Hydrometers, Heavy Liquids, Beaume scale.....	.50	
1072	Hydrometers, Heavy Liquids, Beaume and specific gravity scale, 1.000 to 2.000	1.00	
1073	Hydrometers, Heavy Liquids, with thermometer, Beaume and specific gravity scale	1.50	

of the latter there are two kinds, or from 0 to 70° for liquids heavier than water, and the other from 10 to 70° for liquids lighter than water. These scales, now more generally in use among manufacturers than any other, were first published by Beaume. He constructed his Hydrometer for liquids heavier than water by preparing a solution of salt containing 15 parts of salt and 85 parts of water by weight, making the scale at the point to which it sank in pure water 0, and in the 15° salt solution 15, dividing the space between 0 and 15 into equal parts and continuing in same man-

No.			
1074	Hydrometers, Heavy Liquids, standard, 1.000 to 1.200, 1.200 to 1.400, 1.400 to 1.600, 1.600 to 1.800, 1.800 to 2.000.....	Each	\$1.00
1075	Hydrometers, Lye, Beaume scale.....		.50
1075a	Hydrometers, Milk, giving percentage of water added.....		.50
1076	Hydrometers, Milk, N. Y. Board of Health scale, 0-120°.....		.75
1077	Hydrometers, Milk, with thermometer, N. Y. Board of Health scale, 0-120°..		2.00
1077a	Hydrometers, Milk, Quevenne's		1.00
1077b	Hydrometers, Milk, Quevenne's, with thermometer.....		2.00
1078	Hydrometers, Naphtha, Beaume scale, 40° to 100°.....		.60
1079	Hydrometers, Salt or Pickle, 0° to 100°.....		.50
1080	Hydrometers, Silver, "Actinometers," complete.....		.50
	Hydrometers, Spirits, see Hydrometers for Alcohol.		
1081	Hydrometers, Sugar and Syrup, Beaume's scale, 0-50°.....		.50
1081a	Hydrometers, Sugar, Brix's Scale, plain, 0-30° in 1/2.....		.75
1081b	Hydrometers, Sugar, Brix's Scale, with thermometer.....		2.00
1082	Hydrometers, Vinegar .....		.50
1083	Hydrometers, Low Wine, Tagliabue's Standard.....		3.00
1084	Hydrometers, Wort and Beer, Kaiser's Saccharometers, with thermometer..		1.50
1085	Hydrometers,	Twaddle's No. 1, 0 to 24—1000 to 1120 S. G..... Twaddle's No. 2, 24 to 48—1120 to 1240 S. G..... Twaddle's No. 3, 48 to 72—1240 to 1360 S. G..... Twaddle's No. 4, 72 to 100—1360 to 1500 S. G..... Twaddle's No. 5, 100 to 134—1500 to 1670 S. G..... Twaddle's No. 6, 134 to 180—1670 to 1900 S. G.....	.50 .50 .50 .50 .50 .50

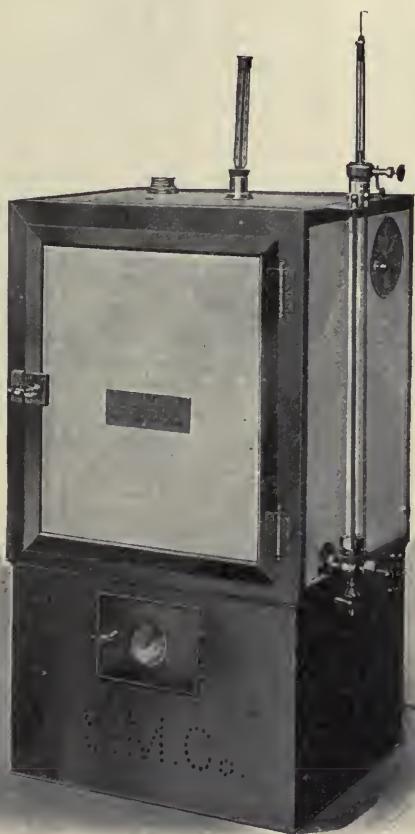
Hydrometers, Urine, see Urine analysis.

Special Hydrometers made to order from sketch or description, in our Glass Blowing Department.

ner. For his Hydrometer for liquids lighter than water he used a 10° solution of salt prepared in the same way, fixing 0 as the point to which this Hydrometer sank and making distilled water the 10 point, and obtained a scale as in the other instrument, but running in the opposite direction.

Twaddle's scale is converted to Specific Gravity by multiplying its degrees by 5 and adding 1000 (water) e. g. 24° Twaddle's—1120 Specific Gravity.

INCUBATORS



1086

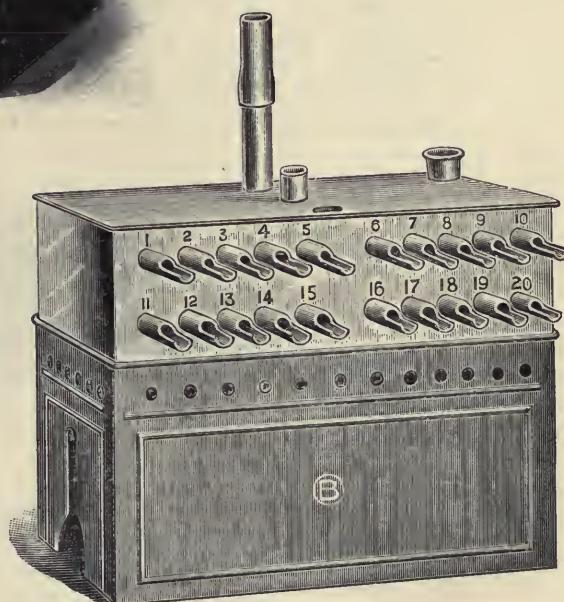
No. 1087a. Incubator, Opsonic, same as 1087, including 6 tubes, $\frac{1}{8}$ inch diameter in the top to hold test tubes. Size 14 inches by 8 inches by 6 inches.

Price \$25.00

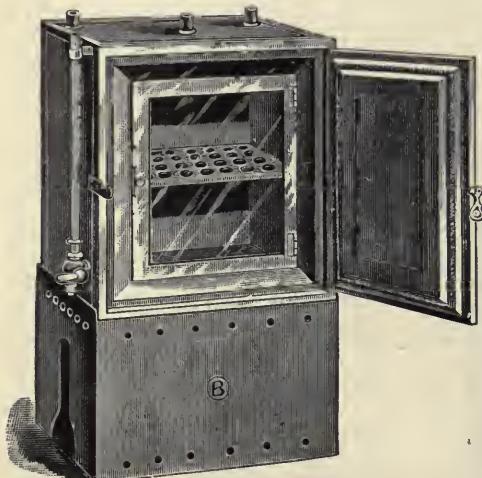
No. 1086. Incubator, Electrically heated, very substantially built, of heavy copper, lacquered, with three walls, heavily tinned, insulating material in white enamel. Inside dimensions 14 ins. high, 12 ins. wide, 10 ins. deep. Price, including regulator, thermometer and cord for connecting, ready for use...\$105.00

No. 1087. Incubator, Opsonic, for the estimation of the opsonic index, with 20 tube receptacles for pipettes, each numbered. Made of heavy polished copper, with tubulations for thermometer, gas regulator and filler. Also, a cup, 1 by $3\frac{1}{2}$ inches for holding instruments. Size: 14 ins. by 8 ins. by 4 ins. Sheet iron base 8 inches high.

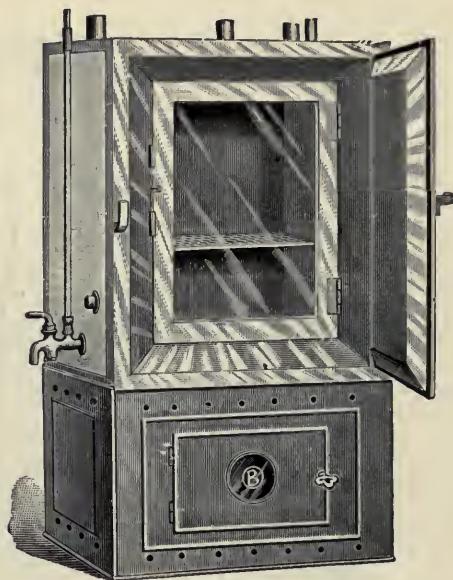
Price \$20.00



1087



1088



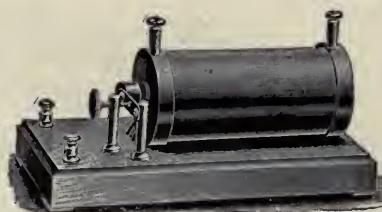
1089

No.

1088 **Incubators, Bacteriological**, double wall for water only, of polished copper on sheet iron base.
 No. 1300. 10 in. high, 8 in. wide, 8 in. deep inside..... \$36.00
 No. 1305. 12 in. high, 10 in. wide, 10 in. deep inside..... 42.00

1089 **Incubators, Bacteriological**, three walls, having both air and water space; of polished copper, the outer surface being covered with insulating material to insure an even temperature; supported on sheet iron base, 10 in. high, with a door, having a mica glass for observation of the flame.
 No. 1270. 9 in. high, 7 in. wide, 7 in. deep inside..... 35.00
 No. 1272. 12 in. high, 9 in. wide, 9 in. deep inside..... 45.00
 No. 1275. 14 in. high, 12 in. wide, 10 in. deep inside..... 60.00

Larger sizes and other styles of incubators quoted upon application.



1090

1090 **Induction Coils, Ruhmkorff's**, with automatic brake and of durable make on polished mahogany base.

Length of spark	$\frac{1}{4}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1 in.
Price	\$4.50	6.75	9.00	13.50	18.00
Length of spark	$1\frac{1}{2}$	2	3	4	6 in.
Price	\$27.00	36.00	54.00	72.00	108.00

JARS



1091



1092



1092a

No.

1091

Jars, Anatomical; with a thin rubber medium under the lid to make the jar air-tight; the lid is securely fastened down with a metallic clamp. To the inner surface of the glass lid is attached a glass ring for the convenient securing of specimens.

Width of Mouth.	Height without Lid.	Capacity.	
2½ in.	4 in.	½ pt.	\$0.50
2½ in.	6 in.	¾ pt.	.60
3½ in.	6 in.	1½ pts.	.90
3½ in.	8 in.	2½ pts.	1.10
3½ in.	12 in.	4 pts.	1.20
5 in.	8 in.	2¾ qts.	1.70
5 in.	12 in.	4 qts.	1.90
5 in.	15 in.	5 qts.	2.10
5 in.	18 in.	6 qts.	2.30
6½ in.	8 in.	1 gal.	2.20
7½ in.	8 in.	1½ gals.	3.20
7½ in.	12 in.	2½ gals.	3.80
7½ in.	18 in.	3½ gals.	4.40
7½ in.	24 in.	4½ gals.	5.00

1092

Jars, Specimen; made of clearest flint glass, with mouths nearly as wide as jars themselves, and glass stoppers carefully ground in.

Diameter of Body.	Height to Shoulder.	Width of Mouth.	Capacity.	
3 in.	4 in.	2½ in.	14 oz.	.50
3½ in.	6 in.	3 in.	29 oz.	.70
4½ in.	8 in.	3½ in.	62 oz.	1.10
6 in.	7 in.	5 in.	98 oz.	1.70
6 in.	12 in.	5 in.	168 oz.	2.50

1092a

Jars, Specimen; made of clear white glass, with wire clamp; glass cover fitting air-tight with rubber ring.

Capacity	½ pt.	⅓ qt.	1 pt.	1½ pt.
Each	\$0.10	.15	.20	.25
Dozen	1.20	1.50	2.00	3.00



1093



1093a



1094



1094a

No.

1093 Jars, Storage, plain round jars, pressed glass lids.

Capacity	$\frac{1}{4}$	$\frac{1}{2}$	1 gal.
Each	\$0.40	.60	.85

1093a Jars, Show Bottles, inverted, for ore or sugar samples.

Capacity	4	8	16	32 oz.	$\frac{1}{2}$ gal.
Each	\$0.15	.20	.25	.40	.70
Dozen	1.50	2.00	2.50	4.00	7.00

1094 Jars, screw capped, nickel-plated cover, high form.

Capacity	4	8	16 oz.
Dozen	\$1.00	1.50	2.00

1094a Jars, screw capped, nickel-plated cover, low form.

Capacity	1	2	4 oz.
Dozen	\$0.60	.80	1.00



1095



1097



1098

1095 Jars, Precipitating, with lip; stout glass.

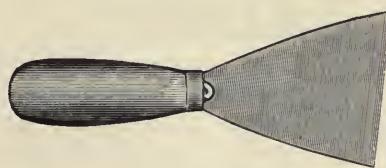
Capacity	$\frac{1}{4}$ pt.	$\frac{1}{2}$ pt.	1 pt.	1 qt.	$\frac{1}{2}$	1	2 gal.
Each	\$0.20	.25	.35	.50	.80	1.25	2.50

1097 Jars, Specie, with japanned tin covers.

Capacity	Pt.	Qt.	$\frac{1}{2}$ gal.	1 gallon.
Each	\$0.20	.30	.50	.75

1098 Jars, Stoneware, with handles and cover, "Waste Jars."

Capacity	1	2	3	4	5 gallons.
Each	\$0.40	.60	.80	1.00	1.20



1099

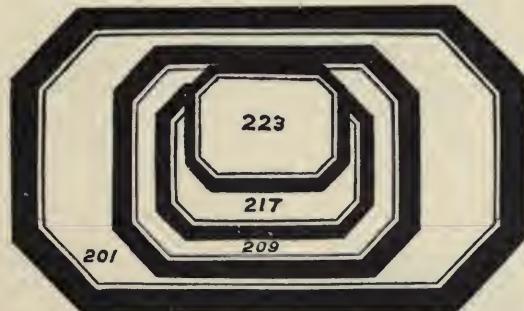
No.					
1099	Knives, Amalgam.	With handle, blade 3½ inches wide.....			\$0.50
1100	Knives, of steel, for cutting glass tubing.....				.75

SILVER NITRATE

 Ag N O_3

1101

1101	Label Books, with names and formulas of the most used chemicals and reagents; strip form, gummed and perforated40
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1102



1102

1102	Labels, gummed paper, red colored rims, Nos. 201, 209, 217, 223, 261...Box	\$0.08
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No.	2004	2007	2002	2001	2006
Size	2¾x1 in.	2⅓x1½ in.	3⅛x1 in.	3⅜x1½ in.	4x1⅔ in.
Per box	\$0.12	.15	.18	.20	.25



1103

1103	Ladies, Melting, wrought iron, with lip.
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Dia.	2½	3	4	5	6 in.
Each	\$0.30	.40	.50	.60	.80

LAMPS



No.

1111 Lamps, Alcohol, glass. With ground on cap, wick and wickholder.
Capacity 2 4 8 oz.

Each	\$0.25	.30	.40
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1112 Lamps, Alcohol, glass. With ground cap, wick and wickholder, side tubulation and stopper.

Capacity	1	2	4	8 oz.
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Each	\$0.35	.40	.50	.60
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1112a Lamps, Alcohol, glass. With nickel-plated screw caps, wick and wickholder. A great improvement over the ordinary glass cap lamp.

Capacity	2	4	8 oz.
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Each	\$0.20	.25	.35
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1113 Lamps, Alcohol, brass. With screw top.

Capacity	2	4	8 oz.
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Each	\$0.50	.60	.80
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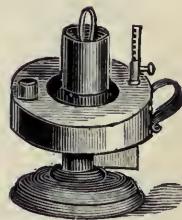
1113a Lamps, Alcohol, brass. With ratchet burner.

Capacity	3	5 oz.
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Each	\$0.60	.75
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WICK HOLDER TURNED
HALF A REVOLUTION.WICK HOLDER END VIEW
FULL SIZE SECTION.

1114



1118

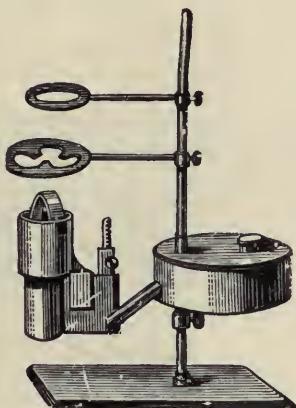
1114 Lamps, Alcohol, Clark's. Having nine facets on the font, it may be readily adjusted to any required position. Very desirable for chemists' and assayers' use. Suitable also for heavy oil.

Capacity	2	4	4 oz.
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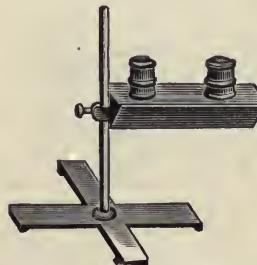
Burner	3-16	$\frac{1}{4}$	$\frac{1}{2}$ in.
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Each	\$0.60	.75	.90
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1115 Lamps, Fletcher's. For sperm oil, of polished brass..... \$0.70
1116 Lamps. Same as above, nickel-plated..... 1.00
1116a Lamps, Fletcher's. A modified form of No. 1115, for tallow or solid fats... .40
1117 Lamp Wicks for above lamps..... .10
1118 Lamps, Berzelius, brass. With Argand burner, for alcohol or kerosene, with adjustable wickholder..... 4.00

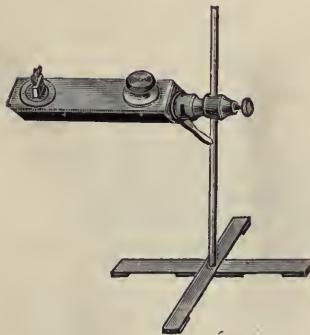


1119



1120

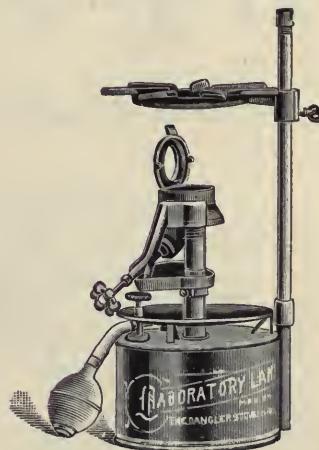
No.			
1119	Lamps, Rose's, brass.	With sliding rod, chimney, triangle, and two brass rings, on mahogany base.....	\$6.00
1120	Lamps, Plattner's, nickel-plated.	On stand.....	3.00
1121	Lamps, Plattner's, nickel-plated.	With patent swivel.....	4.00



1121



1124

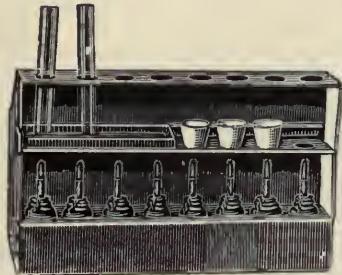


1123

1123	Lamps, Dangler's Laboratory.	For gasoline. The most intense heat can be obtained from this burner, which can be easily and instantly regulated at will; pressure regulated by rubber bulb.....	Net	6.00
		Same, with copper tank.....	Net	7.00
1123a	Burner, for same, only.....		Net	2.50
1124	Extra Rubber Bulbs, for same.....			.40
1124a	Extra Cones or Grates, for same.....			.20



No 1125	Lamps, Kellogg's. For gasoline. Indispensable where a Bunsen Burner flame is required and no gas available. It gives as much heat as several Bunsen Burners, and is better than alcohol lamps. There is no smell, as the gas is consumed as soon as produced, no wick necessary. Complete, as per sketch.....	\$12.00
1126	Burner only, for No. 1125.....	7.50
1126a	Lamps, Kellogg's Gasoline Laboratory Lamp No. 2. This lamp gives a pure blue flame and intense heat. Can be easily and instantly regulated at will. The slide grate allows articles to be placed as near fire as desired. Can be kept hot for use by putting cap on top of burner and turning off part of the force of vapor	6.00
1127	Lamps, Kellogg's New Vapor Lamp. Can be used in sets of two or more lamps, using the same tank.....	3.00



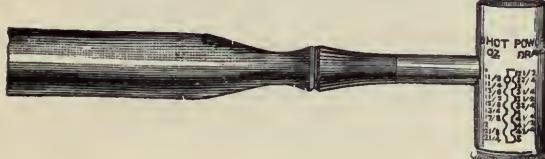
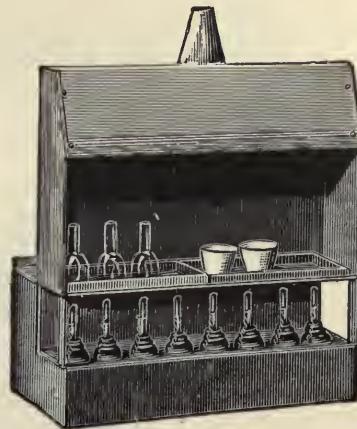
No. 1128 1128 Lamps, Parting. By H. W. Leavens; for alcohol; galvanized iron, very strong; shelves for sand bath and annealing cups; upper shelf perforated for holding test tubes.

Burners	6	8	12
Each	\$3.00	3.50	4.50

1129 1129 Lamps, Parting. Same as preceding, except upper shelf is left out so as to use flasks instead of test tubes. Hood and pipe attached for carrying off fumes.

Burners	6	8	12
Each	\$3.50	.40	5.00

1129a Lamps, Parting, for gas. A. H. Low's design. Twelve burners, with hinged top for parting and annealing.



1131



1132



1133



1134

1130 Lamp Wicks for parting lamps..... Doz. \$0.10

1131 Lead Measures, of improved construction, for test lead..... .25

1131a Lead Foil, chemically pure. Put up in rolls the following widths, 2, 3, 4, 5 and 6 inch. Please state width wanted in ordering.
Price, per lb..... .25

1132 Lenses; see Magnifiers.

1132 Levels, glass; not mounted.

Length	3	4	5	6 in.
Each	\$0.12	.15	.20	.25

1133 Levels, mounted; in nickel-plated cases.
Length 3 4 5 in.
Each \$0.30 .40 .50

1134 Levels, round brass case; nickel-plated, 1½ in. dia..... .75

C. P. Litharge, C. P. Test Lead

C. P. Lead Foil



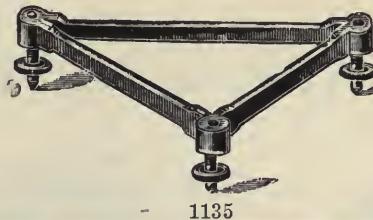
It is a matter of general knowledge among users of these materials that the Pueblo Brand manufactured by the American Smelting and Refining Company at their Pueblo Refinery is the purest grade of Litharge and Test Lead known to the trade.

It is not, as yet, so generally known, however, that the Denver Fire Clay Company take their entire output and are their Sole Selling Agents. These productions are free from gold, silver and bismuth and are uniform in this respect, invariably. The consequence is, consumers are never required to make preliminary, or trial, assays for their insurance in doing control, umpire or bullion work, or to question results obtained from their use.

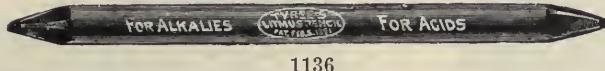
The question of C. P. Lead Foil is always a matter of first importance, particularly at Cyanidation works where much solution and bullion assaying is required. We wish to state that all of our foil is made up by us from the Pueblo Brand of C. P. Pig Lead and is, therefore, free from gold and silver values in every instance, insuring our customers against error or loss.

Our quotations on C. P. Litharge, Test Lead and Lead Foil compare most favorably with those of other houses handling the commercial grades only, and the safety against error insured by their use prompts us to suggest that you cannot afford to use any other Brand.

In addition to the C. P. Goods, we carry a heavy stock of the commercial grades of Litharge, all of which are free from gold and suitable for work in districts where the presence of slight amounts of silver is not a factor of moment. If you have ever had difficulty in getting C. P. Litharge or Test Lead, specify the A. S. & R. Pueblo Brand and Denver Fire Clay Lead Foil. They are absolutely pure and reliable at all times.



1135



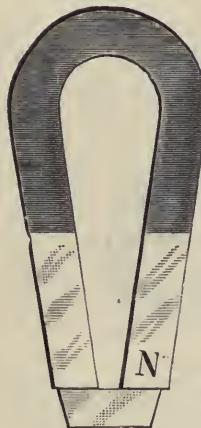
1136



1137

No.

1135	Leveling Stands, three-sided, with set screws.....	\$3.50
1136	Litmus Pencils, of chemically pure litmus, blue on one end, red on the other .....	.25
1137	Magnets, Bar, straight.	



1138



1139

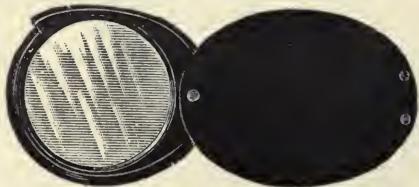


1140



1140a

MAGNIFYING GLASSES



1141



1142

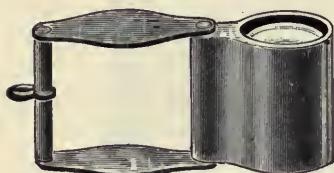
No.

1141 Magnifiers, in rubber case, folding, best quality. 1 in. diameter.

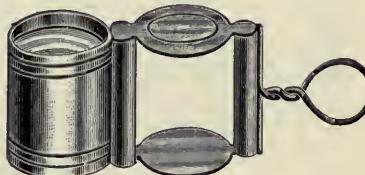
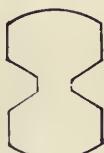
Glasses	1	2	3
Each	\$0.40	.75	1.00

1142 Magnifiers, in metal case, folding, best quality.

Glasses	1	2	3
Each	\$0.50	.80	1.00



1143



1143a

1143 Magnifiers, Coddington's. In metal case, nickeled.

Dia.	1/2	3/4	1 in.
Each	\$1.50	1.75	2.00

1143a Magnifiers, "Globe." The Globe lens is a perfect sphere, consisting of a hollow flint glass globe, made in halves, and inclosing a solid crown glass globe. By the principles of its construction the aberrations are corrected to a higher degree than has heretofore been obtained by any other construction. This lens has an optical axis in any direction, hence the field is perfectly flat and distinct to the outer edge; and what is true of no other lens, the field is always the largest possible. Pocket Magnifiers made on this principle are furnished as follows:

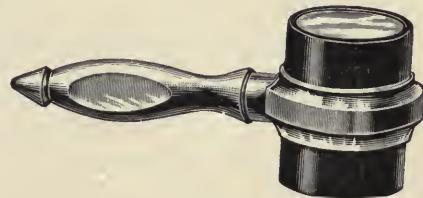
No. 290—1-inch focus, nickel-plated brass mount, magnifying 11 diameters	\$ 4.00
No. 291—3/4-inch focus, nickel-plated brass mount, magnifying 14 diameters	5.00
No. 292—1/2-inch focus, nickel-plated brass mount, magnifying 21 diameters	6.00



1144



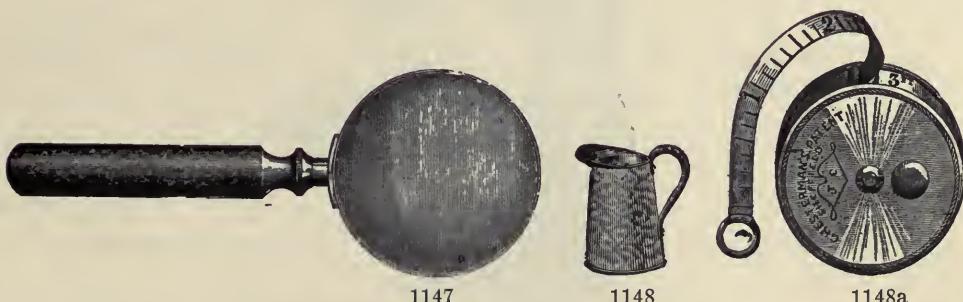
1145



1146

No.

1144	Magnifiers, thread counters. Folding, brass frame, $\frac{1}{4}$ -inch.....	\$0.30
1145	Magnifiers, tripods, brass. With screw adjustment for focus.....	.50
1146	Magnifiers, new "aplanatic." Giving a perfectly flat field of great brilliancy and definition. Illustration giving full size	1.00



1147 Magnifiers, "reading glasses," best quality. Very best finished lens, nickel-plated frame.

Dia.	2	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5 in.
Each	\$0.50	.70	.80	1.20	1.50	2.00	3.00

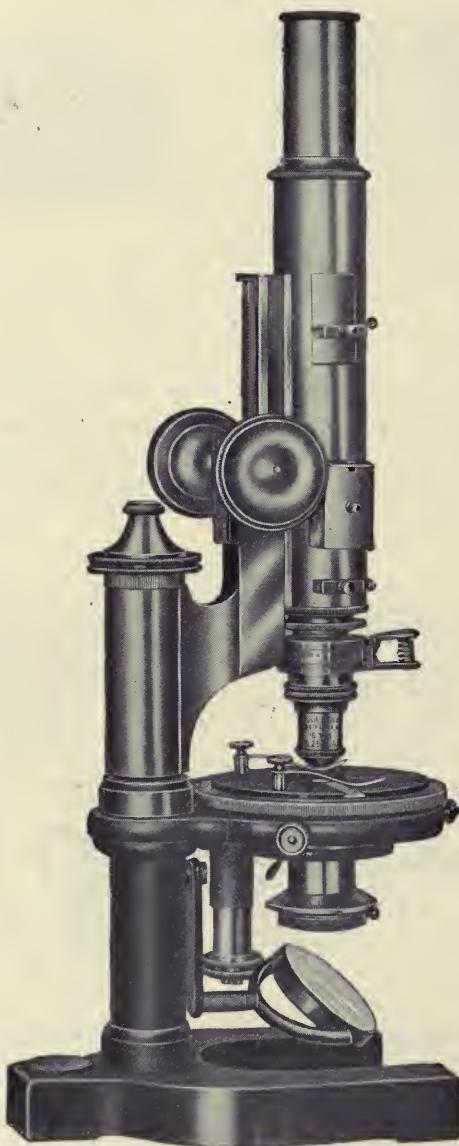
1148 Measures, Agateware, with handles.

Capacity	pt.	qt.	$\frac{1}{2}$ gal.	1 gal.
Each	\$0.40	.50	.75	1.00

1148a Measuring Tapes, steel, inches and centimeters, in German silver case.

Length	3	6	12 ft.
Each	\$1.50	2.25	3.50

Bausch & Lomb Petrographical Microscope Stand LA



This microscope, which possesses all the features essential to a laboratory instrument, has been very popular for petrographical, mineralogical, and crystallographic work. The stand at the price is a very desirable one for students' use, being strong and simple in construction, easily manipulated, and first-class in every detail. Attention is directed to the illuminating apparatus described in the specifications, and, while regularly listed with the quick changing nosepiece, either of the others will be furnished at the difference in price.

SPECIFICATIONS.

Base—Horse-shoe form.

Pillar—Round, and without inclination joint.

Arm—Standard construction, giving a distance of 47 mm. to the center of the stage.
Grooved for attaching the mechanical stage.

Mirror—Plane and concave, 43 mm. in diameter, and mounted on a swinging arm.

Stage—Circular, measuring 76 mm. inside and 88 mm. outside the graduations, which are in single degrees and read by a convenient vernier. With vulcanite top and provided with two scales at right angles to each other, graduated in millimeters, making it useful in the location of objects. Centering screws are provided.

Substage—A mounting for the polarizer or condenser is focused by a quick acting screw, which also throws the substage out of axis when desired.

Focusing Adjustment—Coarse adjustment by rack and pinion, fine adjustment of prism form with micrometer screw having a large head.

Body Tube—Slotted for the Bertrand-lens used in magnifying interference figures. There is adjustment for focusing. The prism box containing the analyzer is movable, so that the analyzer may be removed from the axis when desired. Slot for quartz wedge, $\frac{1}{4}$ undulation mica plate, or gypsum plate, red, first order, is provided. This slot may be closed when accessories are not used. Standard size eyepieces are used, and a diaphragm is included for use above the eyepiece to sharpen the image of the interference figures.

Polarizer—A medium size Nicol prism in a revolving mount, graduated in single degrees and used in the substage. An iris diaphragm is mounted below the prism.

Analyzer—A medium size Nicol prism mounted in the sliding prism box.

Illuminating Apparatus—A two system condenser to give converging rays of polarized light. The upper lens of this condenser is mounted in a metal hemispherical shell attached to the polarizer mounting so that it can be instantly brought into the optical axis or thrown out. This construction gives the greatest convenience in use without increasing the thickness of the stage or in any way disturbing the arrangement of the other optical parts.

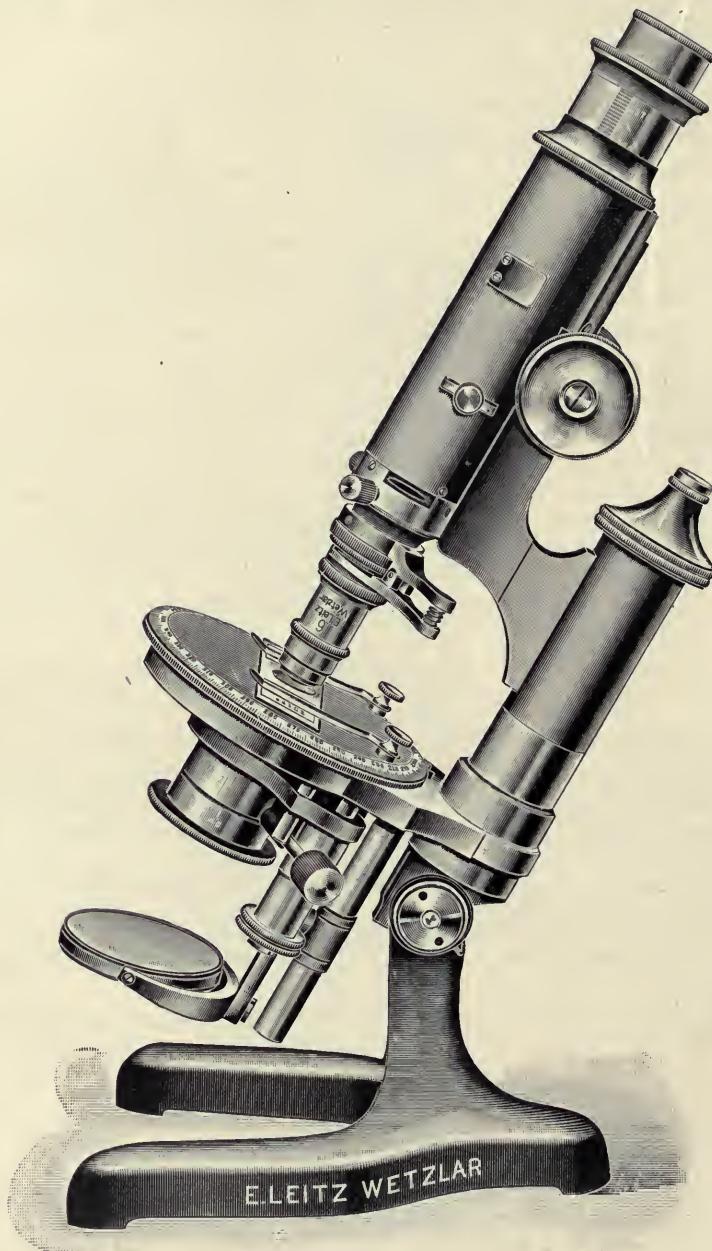
Weight—The LA4 weighs 8 lbs. 12 oz.; in carrying case, 16 lbs. 3 oz.; packed for shipment, 25 lbs.

Case—The instrument is supplied in a polished mahogany carrying case with brass lock and key.

PRICE LIST L A MICROSCOPES.

Catalogue Number	OBJECTIVES	Cross Hair Eyepieces	Quick Changing Nosepiece	Price
	DRY			
LA1	16 mm. 4 mm.	10X 5X		\$ 90.00
LA2	16 mm. 4 mm.	10X 5X	With Two Rings	94.00
LA4	32 mm. 16 mm. 4 mm.	10X 5X	With Three Rings	100.00
BL	Bertrand Lens for magnifying interference figures,			each 5.00
BE	Bertrand Quadrant Eyepiece with revolving prism,			each 25.00
UP	Quarter Undulation Mica Plate, mounted	- - -	each	4.00
2035B	Analyzer, Style B	- - - - -	each	13.50

A New Petrographic Microscope



Made after the specifications of
DR. CHARLES P. BERKEY,
Columbia University, New York.

This instrument has been devised especially to meet the requirements of large laboratory classes in petrography.

It is a simple and nicely adjusted microscope with first-class workmanship and the best lenses, but with only the most essential accessories. It is a high-grade stand with all the necessary equipment for ordinary class uses, and more acceptable for general class purposes, because it is less cumbered with elaborate and seldom-used devices.

The stand is inclinable, with graduated draw tube.

It is fitted with a rack and pinion coarse adjustment and a micrometer movement of the ordinary type.

The condenser and polarizer (19° aperture) may be raised and lowered by a lateral screw. The transition from convergent to parallel light is effected by a quarter turn of a milled head at the side, which throws the two upper lenses of the triple condenser out of action. The polarizer is marked at 0° , 90° , 180° , 270° and is easily removed from the condenser sleeve. The zero point, which coincides with the principal meridian of the microscope (0° — 180°) is at the front of the stand and marked by an index line in the condenser sleeve. The stage is graduated into 360 degrees. Its rotation is read by an index. The stage is provided with a finder. The centering head attached to the lower end of the tube has an opening for the introduction of selenite and mica compensators.

The analyser, which is above the centering head, may at pleasure be thrown in and out of action.

The upper part of the tube has a slit for the reception of a slide containing a Bertrand lens.

The stand is equipped with the following optical parts:

Eyepieces II and III, with adjustable eye lenses and cross lines;

Achromatic Objectives No. 3 and 6 ($\frac{3}{8}''$ and $\frac{1}{6}''$ respectively), securing magnifications of 70, 80, 300, 350 diameters;

Objective Clutch and adaptors for rapidly changing objectives;

Bertrand Lens;

Mica Plate $\frac{1}{4}$ undulation;

Selenite Plate first-order red, both test plates mounted with axis of elasticity at 45° to cross lines and reversible;

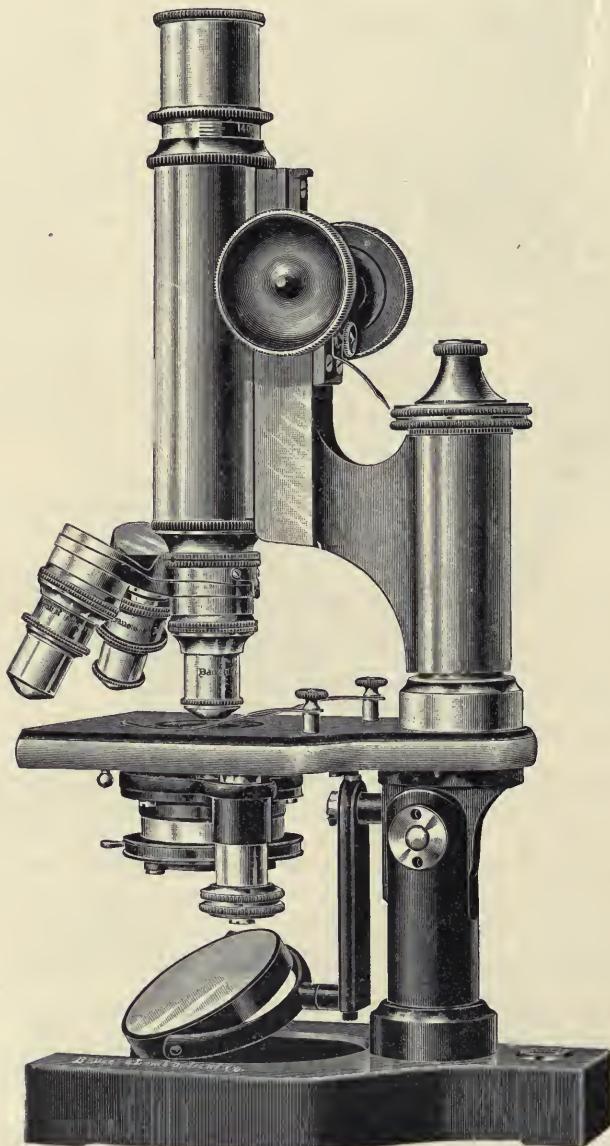
Quartz Wedge three-order, mounted with axis of elasticity at 45° for insertion in same slot as other test plates.

Complete in polished mahogany case with lock and key\$120.00

Incorporated Educational Institutions can obtain these instruments free of duty, prices on application.

New Model Microscope

Stand BB



We carry a full line of Microscopes and Accessories for use in Schools, Colleges and Universities; Biological and Bacteriological Laboratories.

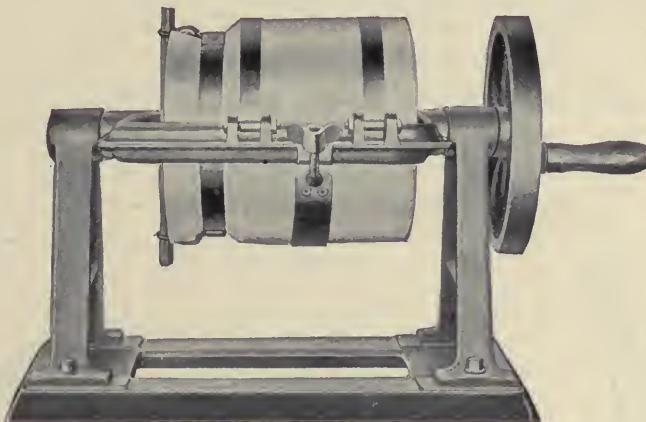
CATALOGUE ON APPLICATION.

BALL MILLS

(Laboratory Sizes.)

In offering these laboratory mills, we desire to call special attention to the fact that the Porcelain Jars of these machines are imported, that they are manufactured from the finest raw materials obtainable, made in the plastic state, thus forming Jars that are impervious to the action of even such materials as ink. These Jars are of so superior a quality that constant use of them has never worn them out.

"THE LITTLE TROJAN."



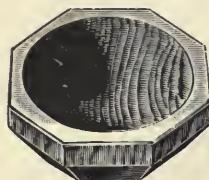
1149

No.

1149	The Jar measures 22 x 24 mm. outside; will handle from a few ounces up to 5 pounds at a charge. Shipping weight, 120 pounds. Floor space 10½ x 25 inches. Hand wheel pulley, 9 x 1 inches; 60 revolutions per minute. Price.....	\$30.00
1150	"Double Trojan" Mill, for two jars, shipping weight 195 pounds, floor space 10½ x 38 inches. Price	50.00

Larger sizes quoted upon application.

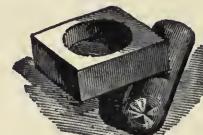
MORTARS



1151



1152



1153



1154

No.

1151 Mortars, agate. With pestles; best quality.

Dia.	1½	2	2½	3	3½	4 in.
Each	\$1.50	2.25	3.50	5.00	8.00	9.50
Dia.	4¼	4½	5	5½	6	6 in.
Each	\$11.00	14.00	18.00	25.00	35.00	

1152 Mortars, Diamond, Plattner's. For crushing small quantities of ore or for flattening silver buttons; made of the best tool steel, hardened and well finished.

Size	Small	Large
Each	\$3.60	5.50

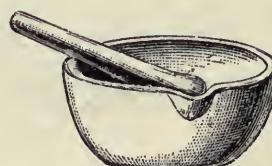
1153 Mortars, Diamond, Leed's. Of hardened steel..... \$2.00

1154 Mortars, steel. Polished inside and out; with pestle.

Dia.	3½	4½	5½ in.
Each	\$1.75	2.25	3.00



1155



1156



1156a

1155 Mortars, glass. With lip and pestle.

Capacity	2	4	8	16	32 oz.
Each	\$0.25	.30	.40	.60	.80

1156 Mortars, porcelain, shallow form. Best make, with lip, rough inside; pestle all porcelain.

Capacity	1½	2	3	6	10	16	22	32 oz.
Dia.	2½	2¾	3¼	4	4½	5½	6½	7½ in.
Each	\$0.25	.30	.40	.50	.60	.80	1.00	1.25

1156a Mortars, porcelain, deep form, for mixtures, etc.

Dia.	3½	4	5	6	7	8 in.
Each	\$0.45	.60	.80	1.10	1.40	1.60

MORTARS



1157



1158



1159

No.

1157 Mortars, Wedgewood. Best quality; pestle with wooden handle.

No.	0000	000	00	0	1	2	3	4
Dia.	3	3 1/4	3 1/2	4	4 1/2	5	6	6 1/2 in.
Capacity	2	3	4	6	11	16	24	30 oz.
Each	\$0.40	.45	.50	.55	.60	.80	1.00	1.10
No.	5	6	7	8	9	10	12	
Dia.	7	8	8 1/2	9 1/2	10 1/2	12	14 in.	
Capacity	40	48 oz.	3 1/2	4 1/2	7	10	17 pts.	
Each	\$1.40	1.80	2.25	3.00	3.50	4.50	6.00	

1158 Mortars, iron, No. 1, high style. Best quality for powdering ore.

Capacity	1 pt.	1 qt.	1/2	1	2	3 gal.
Each	\$0.60	.90	1.25	2.25	4.00	6.00

1159 Mortars, Iron, Bell-shape, with pestle.

Approx. Capacity	1/2	1	2	4 pt.	1	2	3 gal.
Dia.	4	5	5 1/2	6 1/2	9	11	14 in.
Each	\$0.50	.75	1.00	1.50	2.50	5.00	8.00

MORTARS



1160

Code Word, "Casmort."

No.

1160 Mortars, Case-Buck's, improved, of iron, our own make. For grinding and amalgamating. By the rotation of the muller a large sample of ore can be ground in contact with quicksilver.

Dia.	6 1/2	8 1/2 in.
Weight	30	76 lbs.
Muller	16	49 lbs.
Each	\$7.50	10.00

MOULDS



1172



1173

No.

	Size, Inches	Capacity in ozs.		.75 1.00 1.25 2.00 2.50 3.50 5.50 6.50 8.00
		Pure Gold	Silver	
1172	3½ x 1 x 1	20	10	.75
	3½ x 1½ x 1½	50	25	1.00
	4 x 2 x 2	100	56	1.25
	5½ x 2½ x 2½	250	140	2.00
	6½ x 3¾ x 3¾	500	275	2.50
	9 x 3¾ x 3¾	1000	550	3.50
	11 x 4¾ x 4¾	2000	1100	5.50
	11½ x 5¼ x 4½	2500	1350	6.50
	15 x 7 x 6	5000	3000	8.00
1174	Lettering on above moulds, per letter			.06



1175



1176

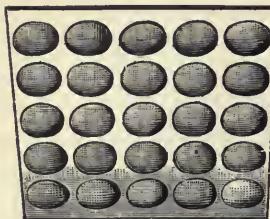
1175	Moulds, Pouring, iron, with 3 conical depressions, bottom running down to a fine point, wood handle; for lead or scorification	\$.75
1176	Moulds, Pouring, iron, with 6 conical depressions and handle, bottom running down to a fine point; for lead or scorification	.75



1177-78



1180



1179

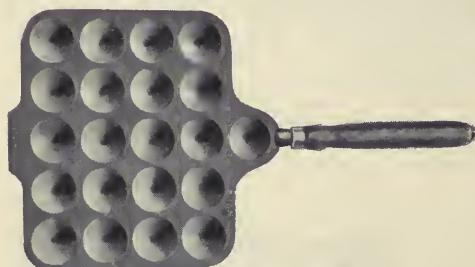


1181



1181a

No.			
1177	Moulds, Pouring, iron, with 12 conical depressions, 2½ in. dia., 1 in. deep; for crucible or scorification assays.....	\$1.00	
1178	Moulds, Pouring, iron, with 12 conical depressions, 3 in. dia., 1½ in. deep; for crucible or scorification assays.....	1.75	
1178a	Moulds, Pouring, iron, with 20 conical depressions, 2½ in. dia., 1 in. deep; for crucible or scorification assays.....	2.00	
1178b	Moulds, Pouring, Goldfield Consolidated Special, with 21 holes.....	4.00	
1179	Moulds, Pouring, cast iron, with 25 spherical depressions; for crucible or scorification assays.....	1.50	
1180	Moulds, Pouring, heavy solid iron, with two conical machined depressions, 2½ in. dia., 1½ in. deep; wood handles; for crucible and scorification assays	1.50	
1181	Moulds, Pouring, heavy solid iron, with 6 conical depressions, 2¼ in. dia., 1½ in. deep, cast iron ring handle; the slag will cool rapidly.....	2.50	
1181a	Moulds, Pouring, as above, with 6 conical depressions, 2 in. dia., 1¾ in. deep, with wrought iron ring handle.....	3.00	



1178b



1183

1183 Moulds, Pouring.

Size for		Weight, lbs.
No. 7—Black Lead Crucible.....	16.....	\$ 2.25
No. 10—Black Lead Crucible.....	27.....	4.00
No. 16—Black Lead Crucible.....	35.....	5.00
No. 25—Black Lead Crucible.....	50.....	6.50
No. 35—Black Lead Crucible.....	60.....	7.50
No. 50—Black Lead Crucible.....	85.....	8.75
No. 80—Black Lead Crucible.....	105.....	10.00
No. 100 or 125—Black Lead Crucible.....	135.....	12.00

Manufacture and Care of Muffles



We manufacture more Muffles than all other manufacturers combined.

The Denver Fire Clay Company's Muffles are known the world over as the standard of excellence. This perfection is due in part to the extreme purity of our clay, but mainly to the extraordinary care and attention we have given to exact proportions in their mixture before moulding. These proportions have only been learned through long experi-

ence and innumerable preliminary trials, and are known only to the head of this department, who has been in our employ for nearly thirty years.

They have many imitators, but absolutely no equals; our thousands of satisfied customers in all parts of the world testify to this.

Occasionally we hear of someone who is not realizing the fullest value from his muffles. By investigation we have almost invariably found it to be a matter of wrong position of their supports, or insufficient support.

We have compiled data gathered from all parts of the world on this subject, and the position and width of the support is a matter of nice adjustment. As it depends on the size of the muffle (we carry one hundred and fifty stock sizes) no set rule can be given, but generally speaking one wide support has a much better effect than two whose joint width is the same, and the moving of the support sometimes as little as a half inch has a very great effect on the life of the muffle. See method of supporting muffles, Case Patent and tile lined furnaces.

It must be always borne in mind that clay goods readily absorb moisture and a perfectly annealed muffle is a necessity to the realization of its full value. They should always be stored in a warm, dry room, and just prior to being put into service should be placed on top of the furnace for several days. Attention to such small details will be found to materially cut down the yearly consumption.

If you are not realizing full efficiency from muffles of our make let us hear from you, as we are confident it is a wrong local condition which can be corrected. It is a pleasure to answer inquiries of this nature, as we wish to extend every assistance in adding to the life and service of our goods. We find in the long run it pays.

If you are using any other make, you are not getting the best.

Muffles should always be ordered by Letter or Number, as on account of small difference in the size of many muffles description by letter reduces chance of error to a minimum. If necessary to give other specifications give outside dimensions. If you cannot find in this list a size to fit your requirements, we will be pleased to make to order any special sizes and as quickly as possible.

Note if your muffles are stamped "DENVER FIRE CLAY COMPANY." None are genuine otherwise. They have many imitators, but positively no equals. By specifying "THE DENVER FIRE CLAY COMPANY" you get products of a house with a record who stand back of their goods.

See our list of Special Muffles on pages 235-6.

MUFFLES

The Best in the World



MUFFLES, D. F. C. CO.

Outside Measurements.

Always used in specifying Muffles.

Inside Measurements.

For determining capacity.

Letter	Width	Length	Height	Shape	Width	Side Height	Greatest Height	Each
AAA..	2½ in.	6 in.	1 $\frac{7}{8}$ in.	2				\$0.50
AA..	3 in.	7 in.	2 $\frac{1}{2}$ in.	2				.50
BB..	3 $\frac{1}{2}$ in.	6 in.	2 $\frac{1}{2}$ in.	2				.50
CC..	4 $\frac{1}{2}$ in.	8 in.	3 in.	2				.60
C..	4 $\frac{3}{4}$ in.	8 in.	3 in.	2				.60
HH..	5 $\frac{1}{2}$ in.	7 $\frac{1}{2}$ in.	4 $\frac{1}{2}$ in.	2				.60
H..	5 $\frac{1}{4}$ in.	10 $\frac{1}{2}$ in.	3 $\frac{7}{8}$ in.	2				.75
CJ..	6 in.	12 in.	4 in.	2	4 $\frac{1}{2}$ in.	1 $\frac{1}{4}$ in.	3 $\frac{1}{4}$ in.	.90
CF..	6 in.	9 in.	4 in.	2	5 $\frac{1}{4}$ in.	2 in.	3 $\frac{1}{2}$ in.	.75
F..	6 in.	10 in.	4 in.	2	5 $\frac{1}{2}$ in.		3 $\frac{1}{4}$ in.	.75
FF..	6 in.	10 in.	4 in.	3	5 $\frac{1}{2}$ in.		3 $\frac{1}{4}$ in.	.75
J..	6 in.	12 in.	4 in.	3	4 $\frac{1}{2}$ in.		3 $\frac{1}{8}$ in.	.90
D..	7 in.	10 in.	4 $\frac{3}{4}$ in.	2	6 in.		3 $\frac{1}{2}$ in.	.75
CD..	7 in.	10 $\frac{1}{2}$ in.	4 $\frac{3}{4}$ in.	3	5 $\frac{1}{4}$ in.		3 $\frac{1}{4}$ in.	.75
DD..	7 in.	12 in.	5 in.	4	6 $\frac{1}{2}$ in.	3 $\frac{1}{4}$ in.	4 $\frac{1}{2}$ in.	1.00
G..	7 in.	12 in.	4 $\frac{1}{2}$ in.	3	6 in.	2 $\frac{1}{2}$ in.	3 $\frac{1}{8}$ in.	1.00
GG..	7 in.	14 in.	5 in.	3	6 in.	2 $\frac{1}{2}$ in.	3 $\frac{7}{8}$ in.	1.20
KK..	8 in.	12 in.	5 in.	3	6 $\frac{1}{2}$ in.	2 $\frac{1}{2}$ in.	4 in.	1.15
KKK..	8 in.	13 in.	4 $\frac{7}{8}$ in.	2	6 $\frac{1}{2}$ in.		3 $\frac{1}{4}$ in.	1.20
K..	8 in.	14 in.	5 in.	3	7 in.	2 $\frac{1}{2}$ in.	4 in.	1.25
LLL..	9 in.	14 $\frac{1}{2}$ in.	5 $\frac{1}{2}$ in.	3	7 $\frac{1}{2}$ in.	2 $\frac{1}{4}$ in.	4 in.	1.50
L..	9 in.	15 in.	5 $\frac{3}{4}$ in.	3	7 $\frac{1}{2}$ in.		4 $\frac{1}{2}$ in.	1.50
LL..	9 in.	15 in.	5 $\frac{3}{4}$ in.	3	7 $\frac{1}{2}$ in.	2 $\frac{1}{2}$ in.	4 $\frac{3}{4}$ in.	1.50
FHN..	9 in.	16 in.	6 in.	3	7 $\frac{1}{2}$ in.	3 $\frac{1}{4}$ in.	4 $\frac{1}{4}$ in.	1.50
I..	10 in.	16 in.	6 $\frac{1}{2}$ in.	2	8 $\frac{1}{2}$ in.	2 $\frac{5}{8}$ in.	5 in.	1.75
II..	10 in.	16 in.	6 $\frac{1}{2}$ in.	3	8 $\frac{1}{2}$ in.	3 $\frac{1}{4}$ in.	5 $\frac{3}{8}$ in.	1.75
CII..	10 in.	16 $\frac{1}{2}$ in.	6 $\frac{1}{2}$ in.	3	8 $\frac{1}{2}$ in.	3 $\frac{1}{4}$ in.	5 $\frac{3}{8}$ in.	1.75
JJJ..	10 in.	18 in.	6 $\frac{1}{2}$ in.	3	8 $\frac{1}{2}$ in.	2 $\frac{5}{8}$ in.	5 in.	2.00
NNN..	10 in.	19 in.	6 $\frac{1}{2}$ in.	3	8 $\frac{1}{2}$ in.	2 $\frac{5}{8}$ in.	5 in.	2.15
MM..	10 in.	20 in.	6 $\frac{1}{2}$ in.	2	8 $\frac{1}{2}$ in.	2 $\frac{5}{8}$ in.	5 in.	2.25
JJ..	10 $\frac{1}{2}$ in.	18 in.	6 $\frac{1}{2}$ in.	3	8 $\frac{1}{2}$ in.	3 $\frac{5}{8}$ in.	5 in.	2.00
N..	10 $\frac{1}{2}$ in.	19 in.	6 $\frac{1}{2}$ in.	3	8 $\frac{1}{2}$ in.	3 $\frac{5}{8}$ in.	5 in.	2.15

(Continued on Page 234.)

THE DENVER FIRE CLAY COMPANY.

MUFFLES—Continued.

Letter	Width	Length	Height	Shape	Width	Side Height	Greatest Height	Each
M..10 $\frac{1}{2}$	in.....20	in.....	6 $\frac{1}{2}$ in.....	3.....	8 $\frac{1}{2}$ in.....	3 $\frac{1}{2}$ in.....	5 in.....	\$2.25
LM..10 $\frac{1}{2}$	in.....22	in.....	6 $\frac{1}{2}$ in.....	3.....	8 $\frac{1}{2}$ in.....	3 $\frac{1}{2}$ in.....	5 in.....	2.50
III..10 $\frac{1}{2}$	in.....16 $\frac{1}{2}$	in.....	6 $\frac{1}{2}$ in.....	3.....	8 $\frac{1}{2}$ in.....	3 $\frac{1}{2}$ in.....	4 $\frac{1}{2}$ in.....	2.00
NN..10 $\frac{1}{2}$	in.....19	in.....	6 $\frac{1}{2}$ in.....	3.....	8 $\frac{1}{2}$ in.....	3 $\frac{1}{2}$ in.....	5 in.....	2.15
RR..10 $\frac{1}{2}$	in.....21	in.....	6 $\frac{1}{2}$ in.....	3.....	8 $\frac{1}{2}$ in.....	3 $\frac{1}{2}$ in.....	5 $\frac{1}{2}$ in.....	2.25
BNN..10 $\frac{1}{2}$	in.....19	in.....	6 $\frac{1}{2}$ in.....	3.....	9 in.....	3 $\frac{1}{2}$ in.....	5 $\frac{1}{2}$ in.....	2.25
O..11	in.....15	in.....	7 in.....	2.....	9 $\frac{1}{2}$ in.....	3 in.....	5 $\frac{1}{2}$ in.....	2.00
OO..11	in.....16	in.....	7 in.....	3.....	9 $\frac{1}{2}$ in.....	3 in.....	5 $\frac{1}{2}$ in.....	2.10
PP..11	in.....18	in.....	7 $\frac{1}{2}$ in.....	3.....	9 $\frac{1}{2}$ in.....	3 $\frac{1}{2}$ in.....	6 in.....	2.25
P..11	in.....18	in.....	6 $\frac{1}{2}$ in.....	3.....	9 $\frac{1}{2}$ in.....	3 $\frac{1}{2}$ in.....	5 $\frac{1}{2}$ in.....	2.15
GET..11	in.....19	in.....	7 in.....	3.....	9 $\frac{1}{2}$ in.....	3 in.....	5 $\frac{1}{2}$ in.....	2.25
PPP..11	in.....20	in.....	6 $\frac{1}{2}$ in.....	3.....	9 $\frac{1}{2}$ in.....	3 $\frac{1}{2}$ in.....	5 $\frac{1}{2}$ in.....	2.25
R..11 $\frac{1}{2}$	in.....19	in.....	7 $\frac{1}{2}$ in.....	2.....	9 $\frac{1}{2}$ in.....	2 $\frac{1}{2}$ in.....	5 $\frac{1}{2}$ in.....	2.40
QVL..12 $\frac{1}{2}$	in.....20 $\frac{1}{2}$	in.....	7 $\frac{1}{2}$ in.....	3.....	10 $\frac{1}{2}$ in.....	3 $\frac{1}{2}$ in.....	5 $\frac{1}{2}$ in.....	2.50
BQ..11 $\frac{1}{2}$	in.....22 $\frac{1}{2}$	in.....	7 in.....	3.....	10 in.....	4 in.....	5 $\frac{1}{2}$ in.....	2.50
QQQ..12 $\frac{1}{2}$	in.....18	in.....	7 $\frac{1}{2}$ in.....	3.....	10 $\frac{1}{2}$ in.....	3 $\frac{1}{2}$ in.....	6 $\frac{1}{2}$ in.....	2.50
QQ..12 $\frac{1}{2}$	in.....19	in.....	7 $\frac{1}{2}$ in.....	3.....	10 $\frac{1}{2}$ in.....	3 $\frac{1}{2}$ in.....	6 $\frac{1}{2}$ in.....	2.50
Q..12 $\frac{1}{2}$	in.....20	in.....	7 $\frac{1}{2}$ in.....	3.....	10 $\frac{1}{2}$ in.....	3 $\frac{1}{2}$ in.....	5 $\frac{1}{2}$ in.....	2.50
USQQ..12 $\frac{1}{2}$	in.....21	in.....	7 $\frac{1}{2}$ in.....	3.....	10 $\frac{1}{2}$ in.....	3 $\frac{1}{2}$ in.....	6 $\frac{1}{2}$ in.....	2.50
KQQ..12 $\frac{1}{2}$	in.....19	in.....	7 $\frac{1}{2}$ in.....	3.....	10 $\frac{1}{2}$ in.....	4 in.....	6 in.....	2.50
TM..12 $\frac{1}{2}$	in.....20	in.....	6 $\frac{1}{2}$ in.....	3.....	11 in.....	3 $\frac{1}{2}$ in.....	5 $\frac{1}{2}$ in.....	2.50
S..12 $\frac{1}{2}$	in.....20	in.....	7 $\frac{1}{2}$ in.....	3.....	10 $\frac{1}{2}$ in.....	3 $\frac{1}{2}$ in.....	6 in.....	2.50
SS..12 $\frac{1}{2}$	in.....21	in.....	8 $\frac{1}{2}$ in.....	2.....	10 $\frac{1}{2}$ in.....	3 $\frac{1}{2}$ in.....	6 $\frac{1}{2}$ in.....	2.75
T..13	in.....21	in.....	7 $\frac{1}{2}$ in.....	3.....	11 $\frac{1}{2}$ in.....	3 in.....	5 $\frac{1}{2}$ in.....	2.75
B..14	in.....21 $\frac{1}{2}$	in.....	7 $\frac{1}{2}$ in.....	3.....	12 $\frac{1}{2}$ in.....	3 $\frac{1}{2}$ in.....	5 $\frac{1}{2}$ in.....	2.75
UUU..14	in.....19	in.....	9 $\frac{1}{2}$ in.....	3.....	12 $\frac{1}{2}$ in.....	5 $\frac{1}{2}$ in.....	7 $\frac{1}{2}$ in.....	2.75
UU..14	in.....19	in.....	7 $\frac{1}{2}$ in.....	3.....	11 $\frac{1}{2}$ in.....	3 $\frac{1}{2}$ in.....	5 $\frac{1}{2}$ in.....	2.75
U..14	in.....18	in.....	7 $\frac{1}{2}$ in.....	3.....	11 $\frac{1}{2}$ in.....	3 $\frac{1}{2}$ in.....	5 $\frac{1}{2}$ in.....	2.75
UA..14	in.....18	in.....	8 $\frac{1}{2}$ in.....	3.....	11 $\frac{1}{2}$ in.....	3 $\frac{1}{2}$ in.....	6 $\frac{1}{2}$ in.....	2.75
PV..14 $\frac{1}{2}$	in.....23	in.....	7 $\frac{1}{2}$ in.....	3.....	12 $\frac{1}{2}$ in.....	4 in.....	5 $\frac{1}{2}$ in.....	3.00
UM..14	in.....21 $\frac{1}{2}$	in.....	7 $\frac{1}{2}$ in.....	3.....	12 $\frac{1}{2}$ in.....	3 $\frac{1}{2}$ in.....	5 $\frac{1}{2}$ in.....	2.75
V..14 $\frac{1}{2}$	in.....19	in.....	8 $\frac{1}{2}$ in.....	3.....	13 $\frac{1}{2}$ in.....	5 in.....	7 in.....	2.75
VVV..14 $\frac{1}{2}$	in.....19 $\frac{1}{2}$	in.....	6 $\frac{1}{2}$ in.....	3.....	13 in.....	3 $\frac{1}{2}$ in.....	5 $\frac{1}{2}$ in.....	3.00
VV..14 $\frac{1}{2}$	in.....19	in.....	7 $\frac{1}{2}$ in.....	3.....	13 $\frac{1}{2}$ in.....	3 $\frac{1}{2}$ in.....	5 $\frac{1}{2}$ in.....	3.00
TXX..16	in.....24	in.....	9 $\frac{1}{2}$ in.....	3.....	14 $\frac{1}{2}$ in.....	5 in.....	7 $\frac{1}{2}$ in.....	3.50
X..16	in.....25	in.....	7 $\frac{1}{2}$ in.....	3.....	14 $\frac{1}{2}$ in.....	4 in.....	6 $\frac{1}{2}$ in.....	4.00
XX..16	in.....22	in.....	8 $\frac{1}{2}$ in.....	3.....	14 $\frac{1}{2}$ in.....	4 $\frac{1}{2}$ in.....	6 $\frac{1}{2}$ in.....	3.50
YY..17	in.....21	in.....	8 $\frac{1}{2}$ in.....	3.....	15 $\frac{1}{2}$ in.....	4 $\frac{1}{2}$ in.....	6 $\frac{1}{2}$ in.....	3.50
TYY..20	in.....37	in.....	10 $\frac{1}{2}$ in.....	3.....	For Roasting.....		10.00	
Z..30	in.....54	in.....12	in.....3		For Roasting.....		20.00	

SPECIAL MUFFLES FOR THE CASE GASOLINE FURNACES (Patented).

Letter	Width	Length	Height	Shape	Width	Side Height	Greatest Height	Each
GE..6	in.....6	in.....6 $\frac{1}{2}$	4 $\frac{1}{2}$ in.....	4	5 in.....	3 $\frac{1}{2}$ in.....	3 $\frac{1}{2}$ in.....	\$0.50
GF..6	in.....6	in.....10	4 $\frac{1}{2}$ in.....	4	5 $\frac{1}{2}$ in.....	3 $\frac{1}{2}$ in.....	3 $\frac{1}{2}$ in.....	.75
GK..8	in.....8	in.....12	5 $\frac{1}{2}$ in.....	4	7 $\frac{1}{2}$ in.....	3 $\frac{1}{2}$ in.....	4 $\frac{1}{2}$ in.....	1.15
GI..10	in.....10	in.....16	5 $\frac{1}{2}$ in.....	4	9 in.....	3 $\frac{1}{2}$ in.....	4 $\frac{1}{2}$ in.....	1.75
GU..14	in.....14	in.....18	6 $\frac{1}{2}$ in.....	4	12 $\frac{1}{2}$ in.....	4 in.....	5 in.....	2.75
GC..6	in.....6	in.....8	3 $\frac{1}{2}$ in.....	Spec....	5 $\frac{1}{2}$ in.....	2 $\frac{1}{2}$ in.....	2 $\frac{1}{2}$ in.....	.75

SPECIAL MUFFLES FOR AMERICAN GAS FURNACE CO.'S FURNACES.

Letter	Width	Length	Height	Shape	Width	Side Height	Greatest Height	Each
A1..3 $\frac{1}{2}$	in.....3 $\frac{1}{2}$	in.....5 $\frac{1}{2}$	2 $\frac{1}{2}$ in.....	2				\$0.50
A2..3 $\frac{1}{2}$	in.....3 $\frac{1}{2}$	in.....7 $\frac{1}{2}$	2 $\frac{1}{2}$ in.....	2				.50
A3..6 $\frac{1}{2}$	in.....6 $\frac{1}{2}$	in.....10	4 $\frac{1}{2}$ in.....	2				.75
A4..7 $\frac{1}{2}$	in.....7 $\frac{1}{2}$	in.....13	4 $\frac{1}{2}$ in.....	2				1.20
A5..11 $\frac{1}{2}$	in.....11 $\frac{1}{2}$	in.....19 $\frac{1}{2}$	7 $\frac{1}{2}$ in.....	3	10 in.....	3 $\frac{1}{2}$ in.....	6 in.....	2.40
A6..13 $\frac{1}{2}$	in.....13 $\frac{1}{2}$	in.....15 $\frac{1}{2}$	6 $\frac{1}{2}$ in.....	3	11 $\frac{1}{2}$ in.....	3 $\frac{1}{2}$ in.....	5 $\frac{1}{2}$ in.....	2.50
A7..21	in.....21	in.....20	7 $\frac{1}{2}$ in.....	3	19 in.....	3 $\frac{1}{2}$ in.....	5 $\frac{1}{2}$ in.....	4.00

No.

1192 Shelf Muffles:

Outside Dimensions.

Letter	Width	Length	Height	Shape	Each
QA..12	in.....12	in.....19	7 $\frac{1}{2}$ in.....	One Shelf.....	\$3.00
				Other sizes made to order.	

SPECIAL MUFFLES

OUTSIDE DIMENSIONS.

Style	Width	Length	Height	Shape	Each
S-2-B	14½	26	8½	3	\$3.50
S-2-C	14½	26	8¼	3	3.50
3	10	16	5½	3	2.00
12	7½	13	4¾	2	1.20
22	7½	13¾	4¾	2	1.20
25	3½	6	2½	2	.60
27	10	17¾	6¾	3	2.00
33	10½	16	6	4	2.00
34-A	5¾	11¾	4½	2	1.00
34-B	5¾	10	4	2	.75
34-C	5¾	11¾	4½	3	1.00
34-D	8¾	13¾	5½	3	1.50
39	9¼	15	5¼	3	1.75
45	6	10	4¼	4	.75
64	17	24½	9¼	3	4.00
76	9½	15½	5¾	3	1.75
77	4¾	7¾	3½	2	.60
80-A	13	21¾	7¾	3	2.75
80-B	9¾	16¼	6¾	3	2.00
86	11	23	7½	3	2.50
96-5	13	15	6¾	3	2.50
96-6	8	13¾	5¼	3	1.50
101	15½	38	9½	3	4.00
108-2	4¾	6¾	3	3	.75
117	17¾	21	11¼	2	4.00
118	11¾	20	7½	3	2.50
119	10½	18	7¼	3	2.25
119-B	19¾	15½	6½	2	3.50
119-D	10	18¾	6¼	3	2.00
119-E	9¾	15¾	6½	3	1.75
126	12	18¾	7¾	3	2.50
143	14	22	7	3	3.50
146	12¼	19	7	3	2.50
154	8¾	15¼	5¼	3	1.50
158-B	12	17¾	7	3	2.50
158-D	13½	15¼	6¾	3	2.50
161	13½	19½	8	3	2.75
164	13¼	19	8	3	2.75
172	21	20	7½	3	4.00
173	17	23	9½	3	4.00
175	14½	21¾	8	2	3.50
207	12½	20¼	7½	3	2.75
208	14	19¾	6¼	3	3.00

SPECIAL MUFFLES

(Continued.)

Style	Width	Length	Height	Shape	Each
209	3½	6	2½	2	\$0.60
213	14¾	23½	6¾	3	3.50
223	12¾	15¼	6¾	3	2.50
235	21¼	28	7¾	3	5.00
236	4¾	12½	4	3	1.00
237	4	10¾	3¾	3	.75
237-A	8¾	14¾	5½	3	1.50
246	12¼	18	7¾	3	2.50
247	12¾	40¼	16	3	6.00
249	8¼	10¼	5	3	1.20
254	7	19¾	5¾	3	2.00
256	16½	18¾	8¾	3	3.50
257	12½	13	6	3	2.00
262	7½	16	4¾	2	1.50
267	13¾	19½	17¼	4	5.00
268	11¼	18½	7½	3	2.50
277	8¼	21½	6	3	2.00
279	13	26	8	4	3.00
281	14¼	18½	7	3	3.00
287	9½	20¼	5½	3	2.50
288	11½	19½	7¼	2	2.50
290	6	17¾	4	2	1.50
294	5¾	12	4	3	1.00
296	17½	27	8	3	5.00
297	10½	22	6¾	3	2.50
299	14¾	22	8	3	3.50
306	10¼	16	6½	3	2.00
308	12¾	19	7½	3	2.50
309-A	13	21½	8¼	3	3.00
309-B	14	21¼	8	3	3.00
310	11½	16	7½	3	2.25
320	13¾	15¼	6¾	3	2.50
324	7¾	12¾	4¼	2	1.20
331	6	16	4	2	1.50
333	12½	15	6¾	3	2.50
334	11	20	6½	3	2.25
335	12½	9¼	8	3	2.00
342	24	18	9	3	4.00
343	5¾	7½	4¾	2	.75
344	12	16	7¾	3	2.50
348	38	43½	14¾	3	20.00
351	6	7	4	2	.75
353	8¾	8½	3¾	3	1.50
354	13	23½	7¼	3	3.00
355	5	11½	3½	2	1.00
356	6	12½	4	2	1.00
357	9	16	6	2	1.50



No.

1193 Muffle Arches A, 9 inches thick.

Size of Muffles.....	LL	I	II	NN	QQ	T	U
Price, each	\$1.10	1.25	1.25	1.25	1.30	1.40	1.50

Any other size Muffle Arch made to order at proportionate prices.

1194 Muffle Arch Reducer B. To diminish the opening, still admitting a 20 grammé Crucible and to prevent cold air draft from striking the muffle when in use.

Size for Muffles...LL	I	II	NN	Q	QQ	SS	U	UUU	V
Price, each	\$0.40	.45	.50	.60	.70	.75	.85	.95	1.00

1195 Muffle Arches for two-muffle assay furnace, 9 inches thick.

Set of two, for Muffles.. LL	I	II	NN	QQ	T	U
Price, per set.....	\$2.20	2.40	2.50	2.50	2.60	2.80

1195a Muffle Arch front for D. F. C., three-muffle, tile-lined furnace, taking NN or QQ Muffles

\$3.00

1196 Muffle Arch Front, for D. F. C. two-muffle, tile-lined furnaces, size for LL-NN-QQ-UU Muffles, per pair, round and flat top.....

2.50

1196a Muffle Coolers, of fire clay. To be used in front of cupels. Size, 1½ x 1½ x 6

.12



1197

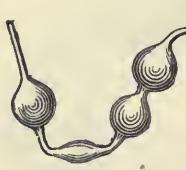
1198

1197 Muffle Doors, Clay.

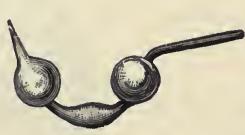
Size for Muffles	GC	GE	GF	GK	GI	GU
Price, each.....	\$0.20	.20	.20	.25	.25	.30
Size for Muffles.....	LL	NN	Q	QQ	U	UUU
Price, each.....	\$0.25	.25	.25	.25	.30	.35

1198 Muffle Doors, Iron.

Size for Muffles	LL	NN	QQ	U	Reducers
Price, each.....	\$0.50	.60	.75	1.00	.50



1201



1202



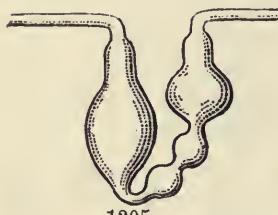
1203



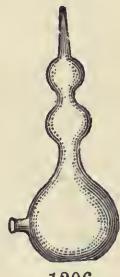
1204

No.

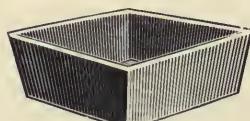
1201	Nitrogen Bulbs, Arndt's, with 4 bulbs.....	\$0.35
1202	Nitrogen Bulbs, Wills & Verentrapp's, with 3 bulbs.....	.35
1203	Nitrogen Bulbs, Volhard's, right angle bulb.....	.50
1204	Nitrogen Bulbs, Fresenius', for direct titration.....	.50



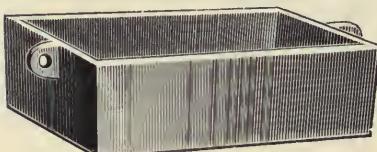
1205



1206



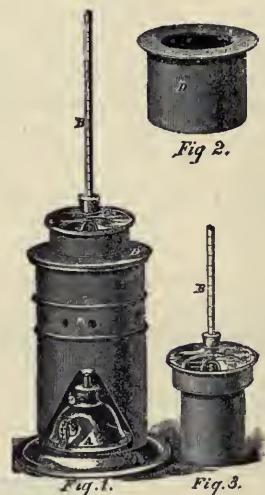
1209



1210



1207



1208

Fig. 1.

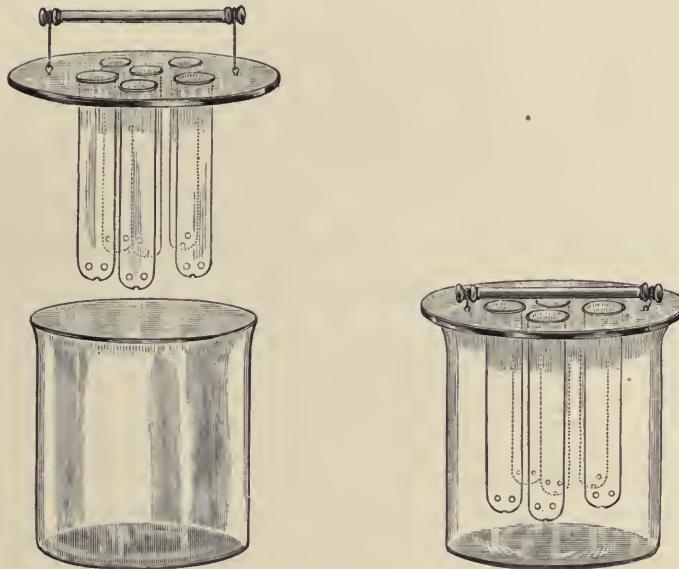
Fig. 2.

Fig. 3.

1205	Nitrogen Bulbs, Troilius', with 4 bulbs.....	\$.50
1206	Nitrogen Bulbs, Simpson's .....	.40
1207	Oil Tester, for open fire test, to ascertain at what temperature the coal oil will flash or explode. Complete with standard thermometer.....	7.50
1208	Oil Tester, Elliott's. Standard of New York State, Iowa, New Jersey, Michigan, and in general use everywhere, with correct thermometer; arranged for oil lamp or Bunsen burner.....	8.00
	Ore Sample Bags, see No. 1215.	
1209	Pans, of cast iron, for drying and roasting ores, Size 6 x 6 x 2 1/4 in. deep....	.50
1210	Pans, of cast iron, with 2 handles, for drying slimes of precipitates, size 18 x 12 x 6 inches.....	5.00
	Paper, Litmus and Turmeric; see Test Paper, No. 1482.	
1211	Paper, Black Glazed, for sampling, etc. In sheets 10 x 12 in. Per 100 sheets	.60
	Per 1000 sheets	5.00
1212	Paper, Manila, medium, for mixing assay samples, best quality, in sheets, 8 1/2 x 12 in.....	.20
	Per 100 sheets	
	Per 1000 sheets	1.75

GLASS APPARATUS FOR PARTING CORNETS

(Similar to the Platinum apparatus used by the United States Mints.)



1213

No.

1213 Parting Apparatus of Glass with Platinum Connections.

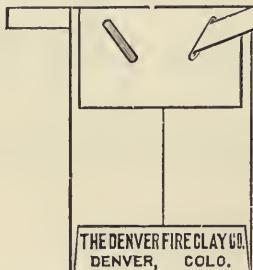
Consists of glass cylinder and plate; latter having six holes for glass tubes with perforated bottoms in which the cornets are placed. The cylinder is filled with acid and the plate with suspended tubes is submerged and subjected to heat. Washing is accomplished by the removal of the plate and tubes, together, from the acid bath, the acid in the tubes draining through the perforations, and submerging in water.

Is convenient, much cheaper than platinum apparatus and equally as efficient. Made in larger sizes to order.

Six-hole size, each \$7.00



1215a



1216



1222

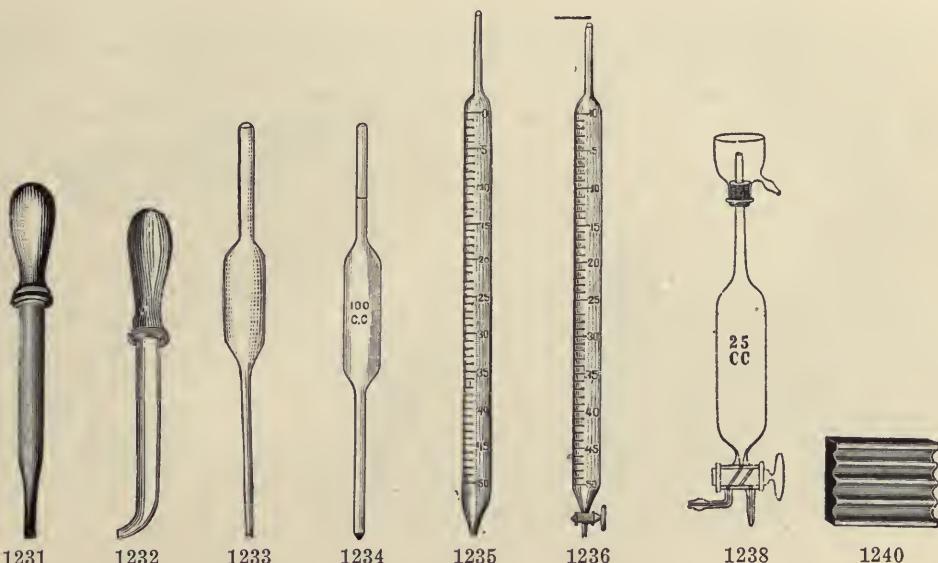


1223

No.

1214	Paper, Parchment , medium, for dialysing and capping; in sheets 24 x 36 in., 10 sheets to lb.....	Per lb.	\$0.40
1215	Paper Bags, Manila , for ore samples, size 4½ x 7 in.....	Price, per 1000	3.50
1215a	Paper Blocks, S. & S. , for absorbing difficult combustible liquids in calorimetric determinations.....	Price, per 100	1.75
1216	Paper Mailing Envelope , for ore samples.		
	Capacity 1 2 4 6 8 oz.		
	Size 3x5 3½x6 4x7 4½x8 5x9 in.		
	Per 100 \$0.60 0.80 1.00 1.20 1.50		
1217	Paper Ore Bag, Excelsior , for mailing, 3½ x 5 in, when closed. Is folded and gummed in such a way that when sealed it is absolutely tight. Especially adapted for mailing finely ground ore samples, or powdered substances.....	Per 1000	3.50
1221	Pencils , for writing on glass, china, metal, etc., blue, red, and yellow. Each	.15	
	Doz.	1.50	
1221a	Pencils, Litmus , see Fig 1136.....	Each	.25
1222	Percolators , conical form, flint glass.		
	Capacity pt. qt. ½ 1 2 3 gal.		
	Each \$0.30 .40 .60 .80 1.80 3.00		
1223	Percolators, Oldberg's , narrow form, flint glass		
	Capacity ½ pt. pt. qt. ½ 1 2 3 gal.		
	Each \$0.30 .35 .45 .70 1.10 2.00 3.00		
	Picks, prospecting. See Hammers, No. 1050.		
1224	Pipes , pure block tin, ¼, ¾, ½ in. inside dia.....	Per lb. Mkt pr.	
1225	Pipes , lead, ¼, ¾, ½ in. inside dia.....	Per lb.	"

PIPETTES



No.

1231	Pipettes, small; with rubber bulb, straight end.....	Each \$0.05; Doz. \$0.35
1232	Pipettes, small; with rubber bulb, bent end.....	Each .05; Doz. .35
1233	Pipettes, with bulb, not fixed.	
	Capacity 5 10 25 50 100 200 cc.	
	Each \$0.10 .12 .15 .20 .25 .40	
1234	Pipettes, Volumetric; most accurately graduated.	
	Capacity 1 2 3 5 10 15 20 25 50 75 100 200 cc.	
	Each \$0.10 .12 .15 .18 .20 .25 .25 .30 .40 .45 .50 .70	
1235	Pipettes, Mohr's; most accurately graduated in cubic centimeters and fractions.	
	Capacity 1 1 2 5 10 10 20 25 50 100 cc.	
	Grad. 1-10 1-100 1-50 1-20 1-10 1-20 1-10 1-10 1-10 1-5	
	Each \$0.25 .35 .40 .45 .50 .55 .60 .70 1.00 1.50	
1236	Pipettes, Mohr's; with glass stopcock and graduated.	
	Capacity 10 25 50 100 cc.	
	Grad. 1-10 1-10 1-10 1-5	
	Each \$1.25 1.50 2.00 2.50	
1237	Pipettes, Overflow, Rickett's; 100 cc., with cup ground to the top.....	\$ 2.50
1238	Pipettes, Overflow, Fresenius'; with 3-way stopcock.	
	Capacity 10 25 50 100 cc.	
	Each \$2.25 2.50 2.75 3.00	
1238a	Pipettes, Assay Ton, 29.166 cc.	Each .60
1239	Pipettes, Sucrose, 52.096 cc.....	Each 1.50
1240	Pipette Rests, of porcelain, fluted.....	Each .65

CLEANING PLATINUM WARE

Every careful analyst uses clean utensils. A habit of cleaning and polishing platinum dishes immediately after using is easily formed, and repays the user with increased confidence in his work as well as in the prolonged life of the article.

Rubbing the surface of platinum with moist sea sand (round grains only), applied with the fingers, serves to remove most impurities and to polish the metal without material loss.

Fusing bisulphate of potash or borax in the dish and then boiling in water and polishing as above with sand is recommended by Gmelin. When it is desired to clean the outer surface of dishes in this manner, they must be placed in dishes of sufficient size to allow the fused flux to completely envelope the article to be cleaned.

Sodium amalgam possesses the property of wetting the platinum without amalgamating with it, even when other metals are purposely added to the amalgam. This substance is therefore useful for effecting a quick and thorough cleansing of the platinum. The amalgam is gently rubbed upon the metal with a cloth and then moistened with water, which oxidizes the sodium and leaves the mercury free to alloy with foreign metals. The mercury is then wiped off and the dish cleaned and polished with sand, as above described.

If the existence of a base metal alloyed with the platinum is suspected, immerse the article first in boiling muriatic acid for a few minutes; then, after thorough rinsing with clean water, immerse in boiling nitric acid free from chlorine. If the dish is unaffected in weight or appearance, and the acid bath fails to give reaction for the base metals, their absence in appreciable quantities is assured.

Notes upon the Use and Care of Platinum Ware

It is important to remember that, although platinum is not oxidized in the air at any temperature, nor attacked by any single acid, yet there are many substances that attack and combine with it at comparatively low temperatures.

The caustic alkalies, the alkaline earths, nitrates and cyanides, and especially the hydrates of barium and lithium, attack platinum at a red heat, although the alkaline carbonates have no effect at the highest temperatures. Sulphur, in the absence of alkalies, has no action, but phosphorus and arsenic attack platinum when heated with it.

Direct contact of platinum with burning charcoal should be avoided, since the silicon reduced from the charcoal ash unites with platinum, making it brittle and liable to fracture.

Also contact with compounds of the easily reducible metals is especially dangerous at high temperatures, as alloys with platinum having a low fusing point are readily formed. This is especially true of lead.

Heating of platinum with spirit lamps is preferable to the use of ordinary gas. When gas is used, care should be taken to have the supply of air sufficient to insure complete combustion, since, with the flame containing free carbon, the platinum suffers deterioration by the formation of a carbide of platinum, which, oxidizing later, blisters the metal. For this reason, also, the inner cone or reducing flame should not be in contact with the metal.

The loosening effect of the Bunsen flame upon the surface of platinum exposed to its action produces the familiar gray appearance which cannot be removed except by burnishing. Platinum triangles often become gray and very brittle from the same cause. Systematic application of moist sand to all articles affected in this way, after use, will keep them in prime condition and materially prolong their life, with but a trifling loss in weight.

PLATINUM



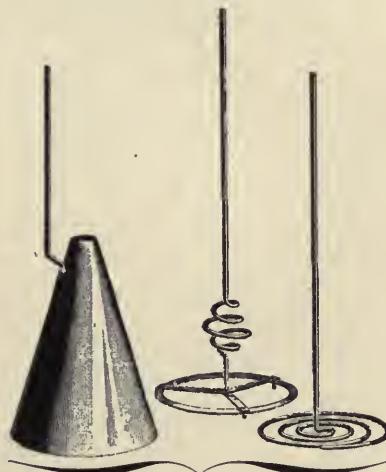
1252



1253



1254



1255

Our platinum ware is warranted pure and of superior make and shape. All crucibles and dishes are hammered. We also make to order any special apparatus. The weights given are approximate only.

We are unable to quote definite prices, but we will make the very lowest figures consistent with the market value of platinum metal.

Old or scrap Platinum bought at market price.

No.

1251 Platinum Boats; for combustion in organic analysis, plain form.

Size	2	2½	3 in.
Weight	5	6½	8½ grms.

1252 Platinum Boats, with handles.

Size	2½	3	3½ in.
Weight	6	7½	9 grms.

1253 Platinum Capsules; flat bottom, corners rounded.

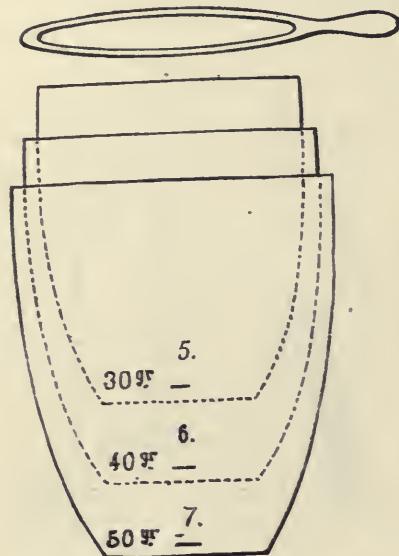
No.	0	1	2
Dia.	1 ¾	1 ½	2 in.
Height	½	1	1 ¼ in.
Weight	5	10	25 grms.

1254 Platinum Cones. For filtering with vacuum pump; made solid in one piece.

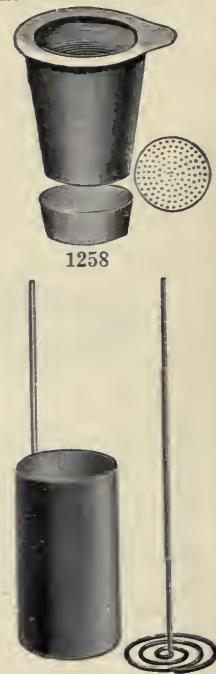
Dia. at top	¾	1	1 ¼	1 ½	2 in.
Weight	2	3	4	7	10 grms.

1255 Platinum Cone and Spiral, according to Fresenius, for the quantitative determination of copper, etc., by galvanic current. Weight, 15 to 25 grammes each.

Support for same, see No. 1470.



1257



1259

No.
1257 Platinum Crucibles; with covers, best hammered ware.



No.	1	2	3	4	5	6	7
Capacity	10	15	20	25	30	40	50 cc.
Weight	10	15	20	25	30	40	50 grms.

1258 Platinum Crucibles, Gooch's Form; with or without covers.

No.	1	2	3
Capacity	20	25	30 cc.
Weight	25	30	37 grms.

1258a Platinum Crucibles, Lawrence Smith's form for mineral analysis, weight, 35 grammes.

1259 Platinum Cylinder and Spiral, for quantitative determination of copper by electrolysis, cylinder 2 x 1 in., wt. about 20 grms.

1260 Platinum Dishes, with lip, best hammered ware. For full sizes, see Fig. 1260, page 245.

No.	1	2	3	4	5	6	7	8	9
Weight	150	125	90	65	48	32	22	14	8 grms.
Dia.	120	110	100	90	80	70	60	50	40 mm.
Capacity	400	325	250	200	130	70	45	30	13 cc.



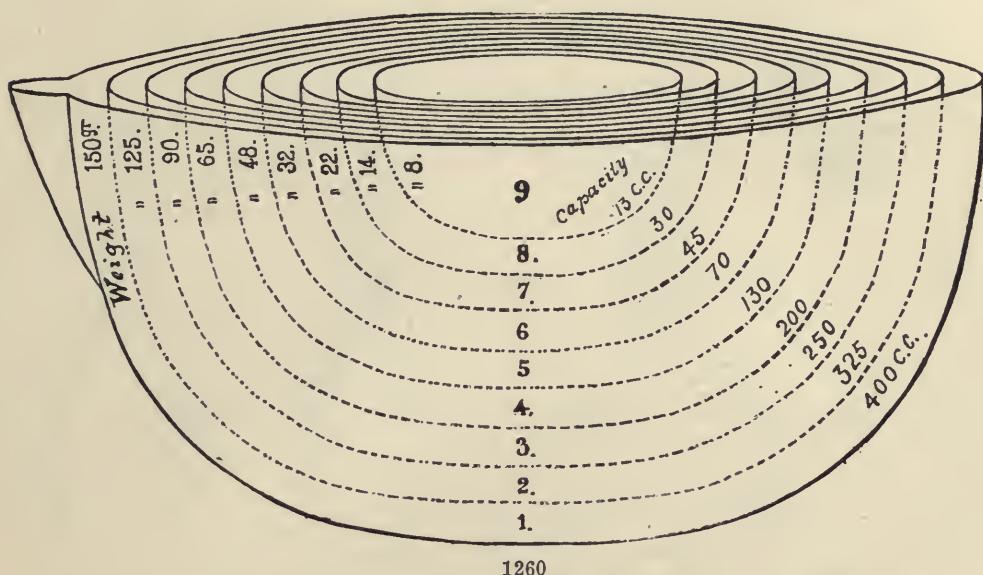
1258a



1261

1261 Platinum Dishes; for incineration of filters, square.

No.	1	2
Dia.	1 1/2	2 in.
Weight	10	20 grms.



1260



1262



1264



1267



1268

No.
1262 Platinum Dishes; for milk analysis, flat bottom.

No.	1	2
Dia.	50	56 mm.
Height	19	25 mm.
Weight	14	17 grms.

1263 Platinum Dishes, for sugar analysis; shallow, with rounded bottom.....

1264 Platinum Filter Boats and Holders, as used in iron and steel analysis;
weight of boat about 15 grammes; weight of boat holder about 23
grammes

1265 Platinum Foil

Size	Light	Medium	Heavy.
Thickness	1-1000	1-500	1-250 in.
Weight per square inch	0.353	0.705	1.411 grammes.

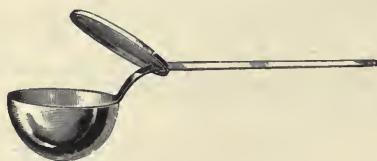
1266 Platinum Gauze, fine.....

1267 Platinum Spatulas, length 3 and 4 inches; weight 4 to 8 grammes.....

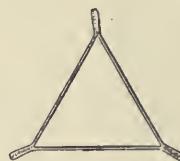
1268 Platinum Sponges, wired for hydrogen ignition.....

1269 Platinum Spoons, without lid.....

No.	1	2	3
Dia.	10	13	16 mm.
Weight	1.5	2.4	3.0 grms.



1270



1271

No.

1270 Platinum Spoons, with lid, for blow pipe analysis.....

No.	1	2	3	4
Dia.	10	13	16	19 mm.
Weight	2.5	3.0	4.0	5.0 grms.

1271 Platinum Triangles, made of Nos. 16 and 15 wire, very substantial.....

For crucibles	10	15	20	25 cc.
---------------	----	----	----	--------

Wt. about	8	10	12	14 grms.
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For Crucibles	30	40	50 cc.
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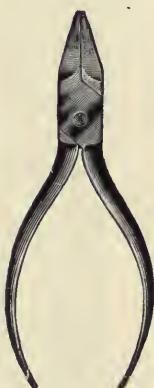
Wt. about	16	18	20 grms.
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1272 Platinum tips, for blow pipes, of correct shape.....

1273 Platinum Wire

No.	12	14	16	18	20	22	24
Wt. per in.	1.8	1.1	.7	.45	.28	.17	.12 grms.
No.	26	27	30	34	35	36	
Wt. per ft.	.85	.65	.33	.132	.101	.08	grms.

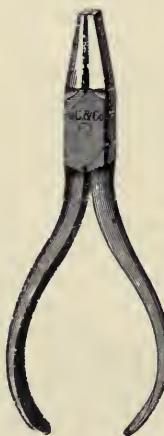
1274 Platinum Apparatus of any special kind or shape furnished. Prices given upon application.



1281



1282



1283



1284

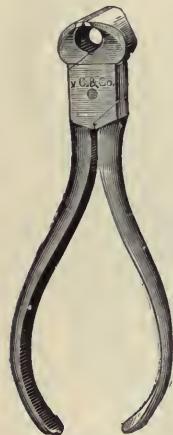
1281 Pliers, "Button," straight, for holding buttons while brushing; 5 in..... \$0.40

1282 Pliers, "Button," turned-down nose, for holding buttons while brushing;
5 in..... .50

1283 Pliers, flat nose, steel faced..... .5 in. \$0.30; 6 in. .40

1283a Pliers, round nose, steel faced..... .5 in. .30; 6 in. .40

1284 Pliers, diagonal cutting, nippers steel..... .5 in. .75; 6 in. .85



1285



1286



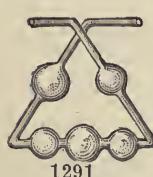
1289



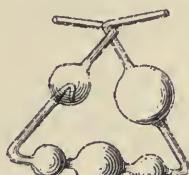
1290

No.

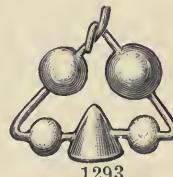
1285	Pliers, end cutting, nippers steel.....	5 in. \$0.75; 6 in.	\$0.85
1286	Pliers, side cutting, steel.....	5 in. .75; 6 in.	.85
1287	Pliers, Gas, 8 inches.....	Each	.50
1289	Pliers, Plattner's, side cutting, nippers, nickel-plated, for breaking off small pieces from the minerals to be tested.....		1.00
1290	Pokers, of iron, for furnaces.....	Each	.50



1291

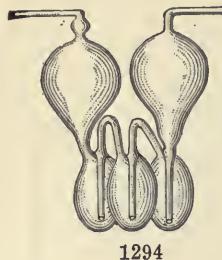


1292

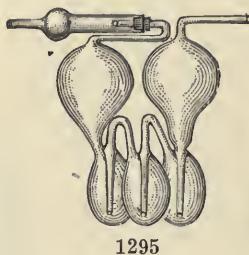


1293

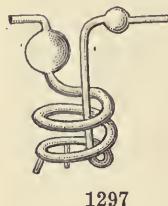
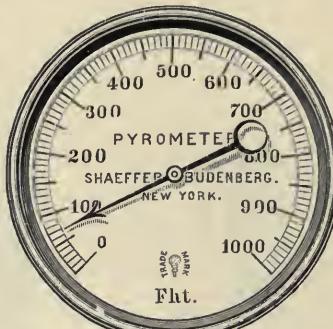
1291	Potash Bulbs, Liebig's, with 5 bulbs.....		\$0.50
1292	Potash Bulbs, Liebig-Dittmar's .....		.75
1293	Potash Bulbs, Liebig-Kyll's .....		.75



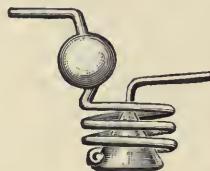
1294



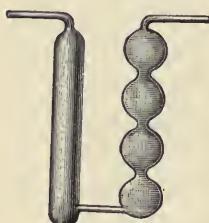
1295



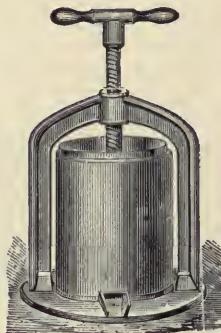
1297



1298



1298a



1298b



1299



1300

No.				
1294	Potash Bulbs, Geissler's, plain			\$0.85
1295	Potash Bulbs, Geissler's, with CaCl_2 tube attached			1.00
1296	Potash Bulbs, Geissler's, with CaCl_2 tube attached by ground joint.....			1.50
1297	Potash Bulbs, Winkler's, spiral, medium size			1.25
1298	Potash Bulbs, Winkler-Kyll's			1.50
1298a	Potash Bulbs, Mitcherlich's .....			.50
1298b	Press, for pressing herbs, meat, etc. This is the only press made having a wrought-iron screw, machine-cut thread, working in a copper socket, to prevent rusting up.			
	Quart			3.50
	$\frac{1}{2}$ gallon			4.50
	1 "			7.00
	2 "			10.00
1299	Pulverizers or Mills, for grinding grain, soft ores, bones, etc.			
	Size No. 2	3	5	
	Height 12½	15	17 in.	
	Each \$4.00	6.00	9.00	
1300	Pyrometer, Gauntlet System, reading up to 1500° F. 5-inch dial, \$26.00; 7-inch dial 30.00			



1300a

1300b

No.

1300a	Pyrometer, Electrical or Hoskins' Heat Gage, well recommended by many users, guaranteed accurate up to temperatures of 1400° C. or 2550° F. Price of complete Heat Gage or Pyrometer with one 36" Hot End and 20 ft. copper leads.....	\$50.00
	Extra Hot End (36" long) complete with Handle, Adjusting Resistance, and 20 ft. of cable.....	7.50
	Hot ends can be supplied any length, but the standard is about 36" long. For each additional foot of Hot End add \$1.50.	
	In ordering be sure and state whether a Fahrenheit or Centigrade scale is wanted. Also the length of copper leads necessary to connect the Hot End to the Pyrometer, if the distance is greater than 20 feet.	
1300b	Pyrometer, Heraeus-Le Chatelier for measuring temperature between 0 and 1600° C., including Galvanometer, Standard Heraeus Element (two 60 in. lengths joined), with certificate, and one each outside and inside high temperature porcelain protection tubes.....	150.00
	Ditto, but with shorter Heraeus Element (two 18 in. lengths joined), with certificate; and corresponding porcelain tubes.....	115.00
	Ditto, with shorter Heraeus Element (two 12 in. lengths joined), without certificate, and with corresponding porcelain tubes.....	100.00
	Note:—The Heraeus Elements can be replaced at any time as they are interchangeable, and all other parts are sold separately, at the following prices:	
	Galvanometer	75.00
	Standard Heraeus Element, two 60 in. lengths, with certificate.....	60.00
	Heraeus Element, two 18 in. lengths, with certificate.....	31.50
	Heraeus Element, two 12 in. lengths, without certificate.....	20.00

Pyrometer, Le Chatelier's, Portable



1300c

No Levelling. Automatic Coil Lock.

Built in Hard Rubber and Teak Wood Case.

No.

1300c Here is at last a practical sensitive and accurate form of the world famous Le Chatelier Pyrometer. It is truly portable, for you have only to set it down anywhere and open the lid. Not bothered by vibrations. 3000° F. or 1600° C.

Portable Indicator as illustrated	\$80.00
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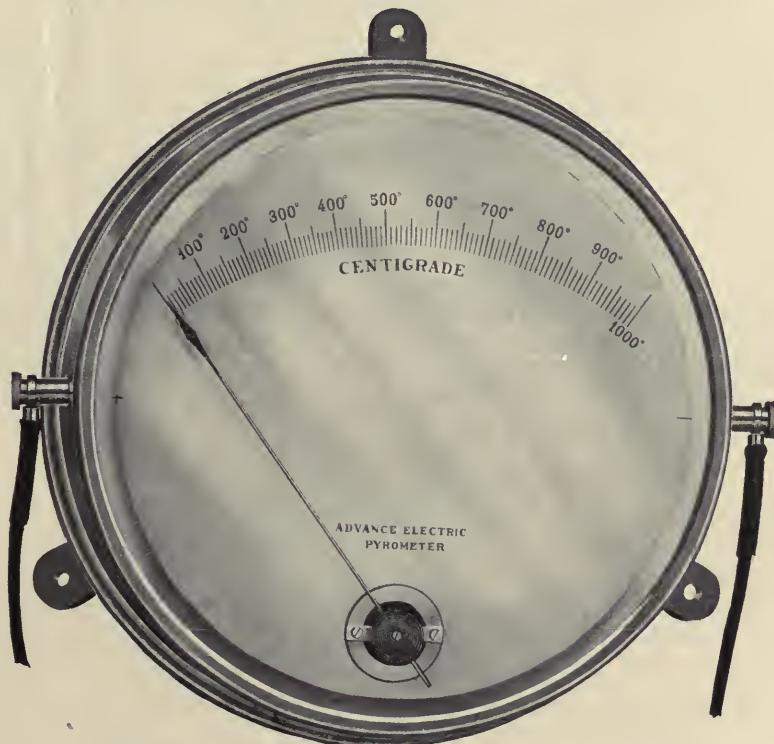
60-inch Platinum, Rhodium-platinum Thermocouple, which can be exactly duplicated at any time.....	40.00
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48-inch set of Outside and Inside Pyrometer Tubes of Electroquartz.....	7.00
---	------

	\$127.00
--	----------

Thermocouples are interchangeable and can be supplied of any length, per foot, \$8.00.

Pyrometer, Electrical, "Advance"



1800° F.

1300d

1000° C.

No.

1300d This indicator has the largest and most easily read scale of any Pyrometer sold in Europe or America. Dial is 10 inches in diameter. Solid brass dust-proof case, beveled plate glass front. It is a wall pattern indicator, not affected by even severe vibrations. Operates with any one or any number of advance Fire-rods of any length and near or far from the furnaces.

For over two years in use on Annealing, Hardening, Tempering and Blast Furnaces, and in such work as galvanizing, chemical manufacture, flue temperature measurement, etc.

PRICE.

Form "A" Indicator.....	\$60.00
36-inch Fire-rod	4.00
Connection Head .....	.75
	\$64.75

Connecting wires extra, as needed.

Fire-rods up to and including the 72-inch length are $\frac{1}{2}$ inch outer diameter. The 91-inch rods are $\frac{3}{4}$ inch outer diameter.

Fire-rods:

PRICES.

36 in. long.....	\$4.00
48 in. long.....	5.00
64 in. long.....	6.50
72 in. long.....	7.50
91 in. long.....	9.50
Connection head for Fire-rod (for connecting the wires to any rod).....	.75
Hard rubber handle containing cold-junction thermometer for work of extreme accuracy	5.00
Adjustable disc for Fire-rod .....	.60

SEGER PYROMETER CONES

1300e Pyrometer Cones, Seger's Imported, for use in the ceramic industry ranging from 590° to 1910° Centigrade.

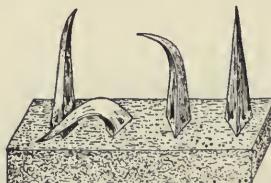


Table showing temperatures at which the cones begin to melt, viz.:

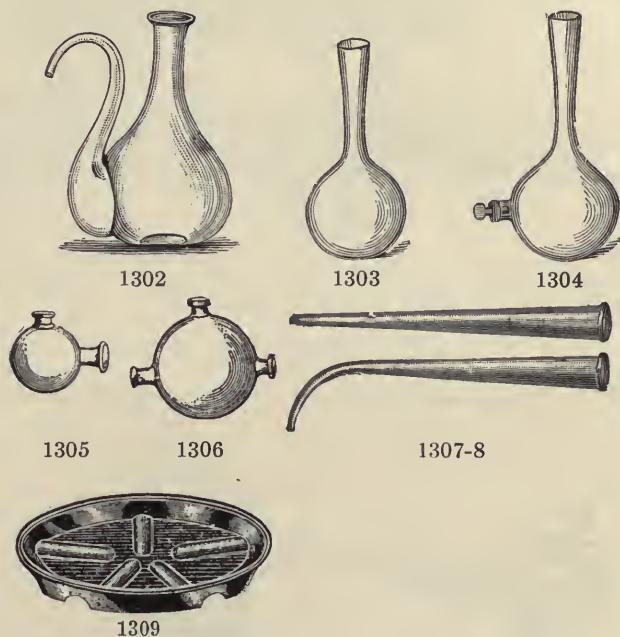
Segercone Number	Temper. Centig.	Segercone Number	Temper. Centig.	Segercone Number	Temper. Centig.
022	590°	01	1130°	21	1550°
021	620°	1	1150°	22	1570°
020	650°	2	1170°	23	1590°
019	680°	3	1190°	24	1610°
018	710°	4	1210°	25	1630°
017	740°	5	1230°	26	1650°
016	770°	6	1250°	27	1670°
015	800°	7	1270°	28	1690°
014	830°	8	1290°	29	1710°
013	860°	9	1310°	30	1730°
012	890°	10	1330°	31	1750°
011	920°	11	1350°	32	1770°
010	950°	12	1370°	33	1790°
09	970°	13	1390°	34	1810°
08	990°	14	1410°	35	1830°
07	1010°	15	1430°	36	1850°
06	1030°	16	1450°	37	1870°
05	1050°	17	1470°	38	1890°
04	1070°	18	1490°	39	1910°
03	1090°	19	1510°		
02	1110°	20	1530°		

These cones are sold in single numbers packed in boxes of 100 cones each,
and also in assorted numbers, any quantity, as required.

Price per 100 net..... \$3.00



1301



1305

1306

1307-8

1309

No.

1301	Respirators, Cover's patent. The most complete device ever offered for protecting the lungs and throat from dust, poisonous gases and all other impurities	\$2.00
1302	Receivers, Florentine. For collecting distillates. Capacity 1 pt. 1 qt. $\frac{1}{2}$ gal.	
	Each \$0.50 .60 1.00	
1303	Receivers for retorts. Glass, plain. Capacity 4 8 16 32 oz.	
	Each \$0.15 .20 .25 .30	
1304	Receivers for retorts. Glass, with tubulature and glass stopper. Capacity 4 8 16 32 oz.	
	Each \$0.25 .35 .50 .60	
1305	Receivers with two tubulations. Capacity 8 16 32 oz.	
	Each \$0.40 .50 .60	
1306	Receivers with three tubulations. Capacity 8 16 32 oz.	
	Each \$0.50 .60 .80	
1307	Retort Adapters, straight. Wide End $\frac{1}{2}$ 1 $1\frac{1}{2}$ 2 in. dia.	
	Each \$0.15 .20 .30 .40	
1308	Retort Adapters, bent. Wide End $\frac{1}{2}$ 1 $1\frac{1}{2}$ 2 in. dia.	
	Each \$0.15 .20 .30 .40	
1309	Rests for Bottles, to put under bottles containing acids, etc., for protecting table; of porcelain, 30c; of hard rubber, 25c.	



1311



1312

No.
1311**Retorts, Bohemian glass, plain.**

Capacity	2	4	8	16	32 oz.	$\frac{1}{2}$	1 gal.
Each	\$0.12	.15	.22	.28	.35	.50	.75

1312 **Retorts, Bohemian glass, with tubulature and glass stopper.**

Capacity	2	4	8	16	32 oz.	$\frac{1}{2}$	1	2 gal.
Each	\$0.20	.25	.35	.45	.60	.90	1.25	2.50



1313



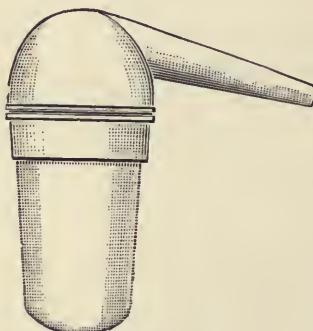
1314

1313 **Retorts, with ground in receiver, glass stoppered.**

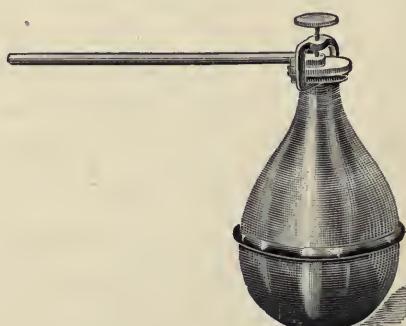
Capacity	4	8	16 oz.
Each	\$0.75	1.00	1.50

1314 **Retorts, porcelain, with tubulature and stopper.**

Capacity	4	8	16 oz.
Each	\$1.25	1.50	1.75



1314a



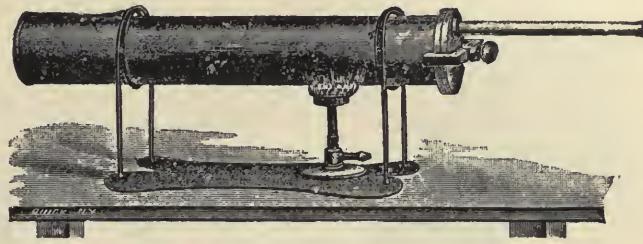
1315

1314a **Retorts, Royal Berlin porcelain, with detachable hood, 5-gallon capacity** Each \$40.001315 **Retorts, copper. For generating oxygen; with iron clamp and brass delivery tube.**

Capacity	$\frac{1}{2}$ pt.	1 pt.	1 qt.	$\frac{1}{2}$ gal.
Each	\$2.25	2.75	3.25	3.75



1315a



1315b

No.

1315a Retorts, iron. For generating oxygen; dimensions 11 inches deep, 7 inches diameter. Cover is turned and fitted with asbestos packing.

Price \$5.00

1315b Retorts, of iron, cylindrical form, for gradually generating oxygen, $3\frac{1}{2}$ x 22 inches.

Price 3.00

Folding support for same. Price..... 1.00



1316



1316a



1317

1316 Retorts, iron. For mercury distillation, etc.; movable cover fastened by screw clamp and milled smooth, making it absolutely tight fitting.

Capacity	$\frac{1}{2}$ pt.	1 pt.	1 qt.	$\frac{1}{2}$	1	2 gal.
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Each	\$2.50	2.75	3.25	4.00	6.00	8.00
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1316a Retorts, Nevada or oval top, complete, with iron delivery pipe.

Capacity	3	4	5	6	10 pts.
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Holds Quicksilver	38	50	63	75	125 lbs.
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Weight	18	25	30	44	65 lbs.
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Price	\$7.00	8.00	9.00	10.50	12.00
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Note:—For use with the above retorts we can furnish our furnaces, Catalogue No. 980, fitted with necessary Retort Plate to hold retort.

1317 Rings. Of porcelain, concentric, for water baths, etc.

In sets of	5	6	7
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Dia. of largest	16'	20	25 cm.
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Set	\$1.00	1.50	2.00
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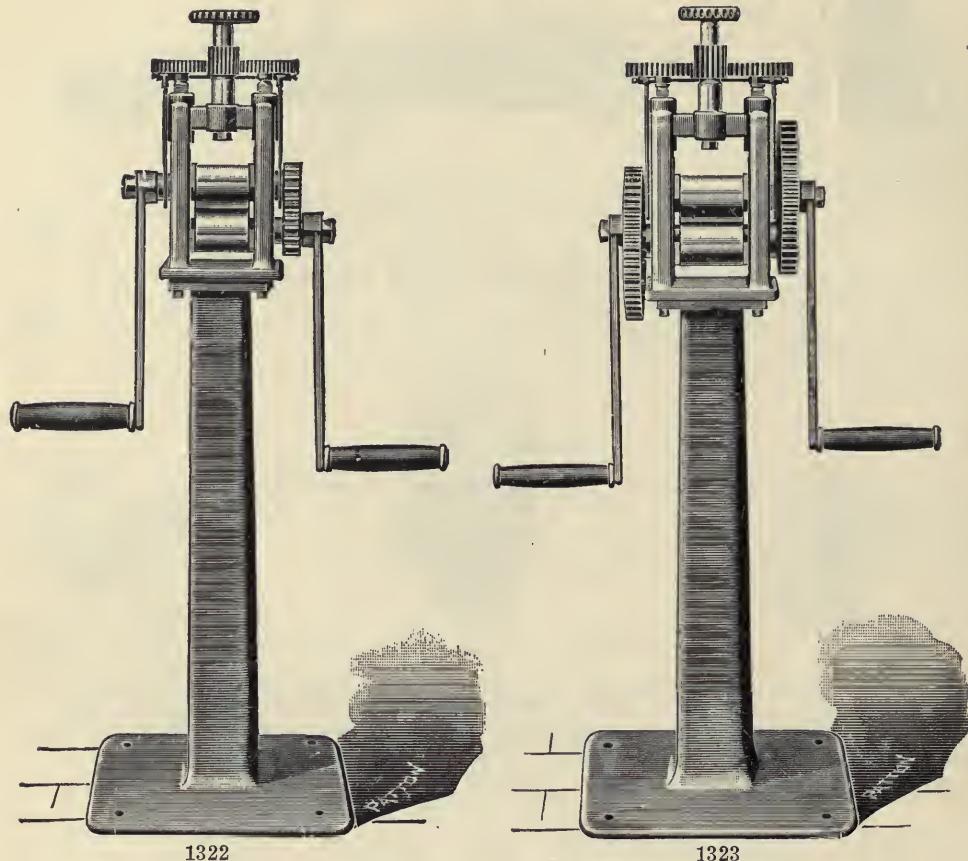


1321

1321 Roasting Dishes; of clay, very shallow, our own manufacture.

Dia.	$2\frac{1}{2}$	3	4	5	6 in.
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Doz.	\$0.70	.80	.90	1.10	1.75
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No.

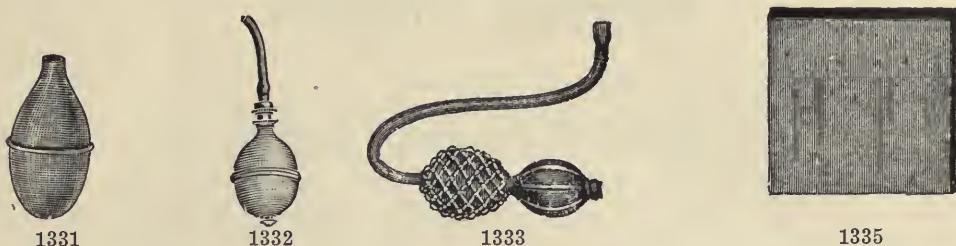
1322 **Rolling Mills; for metals.** Improved single geared hand mills, with flat rolls.

No.	2	3	4
Size of rolls	2 x 1 1/2	3 x 2 1/4	4 x 2 3/4 in.
Weight	80	145	190 lbs.
Each, net	\$30.00	50.00	75.00

1323 **Rolling Mills, for metals.** Improved double geared hand mills, with flat rolls.

No.	3	4
Size of rolls	3 x 2 1/4	4 x 2 3/4 in.
Weight	180	225 lbs.
Each, net	\$75.00	100.00

Note:—The above hand rolling mills for assayers are mounted upon cast iron column. The rolls are evenly tempered, truly ground, finished with a high polish, and are fully warranted. The gears are all cut, cranks of steel, boxes of bronze, and the pressure screws of steel, with the points tempered.



NO.						
1328	Rubber Aprons, 36. in wide, 50 in. long.....					\$0.75
1330	Rubber Sleeves				Pair	.40
1331	Rubber Bulbs, for pipettes, etc.					
	Capacity 2 5 10 25 50 cc.					
	Each \$0.05 .05 .10 .20 .25					
1332	Rubber Bulbs, with valve for wash bottles, etc. Capacity 50 cc.....					.40
1333	Rubber Bulbs, or Hand Bellows, with valve; two bulbs for use with blow pipes, etc., giving a continuous blast.....				Each	1.00
1333a	Rubber Bulb, with flexible tube, for Orsat's apparatus.....				Each	.40
1333b	Rubber Bulb, double acting, for Orsat's apparatus, to take gas samples "Rubber Aspirator"					2.00
1334	Rubber Sheeting, pure gum, unvulcanized, in rolls, 3 feet wide. Light, medium and heavy.....				lb.	4.00
1335	Rubber Pads. Of pure gum $\frac{1}{2}$ in. thick, for dressing amalgamating copper plates.					
	Size 4 x 6 6 x 6 in.					
	Each \$1.00 1.25					
1336	Rubber Stoppers. These are made of pure Para Gum, and not having any adulteration, they will float on water.....			Oz. \$0.25; lb. 3.50		
No.	Large End.	Small End.		No. to Lb.		
00.....	14 mm.....	10 mm.....		180		
0.....	15 mm.....	11 mm.....		120		
1.....	18 mm.....	14 mm.....		90		
2.....	20 mm.....	16 mm.....		80		
3.....	23 mm.....	19 mm.....		60		
4.....	25 mm.....	20 mm.....		50		
5.....	27 mm.....	23 mm.....		40		
6.....	32 mm.....	26 mm.....		30		
7.....	36 mm.....	30 mm.....		22		
8.....	40 mm.....	34 mm.....		18		
9.....	44 mm.....	36 mm.....		15		
10.....	50 mm.....	41 mm.....		11		
11.....	55 mm.....	50 mm.....		9		
12.....	62 mm.....	54 mm.....		6		
13.....	68 mm.....	57 mm.....		5		



1337-38

1339

1340

1337	Rubber Sheeting, vulcanized on muslin. White, for mixing ore samples; rolls 36 in. wide	Yard	\$0.75
1338	Rubber Sheeting. Same as above, black.....	Yard	.75
1339	Rubber Stirrers, point a flexible cone. For washing down Ba(OH) ₂ , etc., from walls of beakers, etc.....		.25
1340	Rubber Tips, s. c. "Policemen." To be attached to glass rod, for scraping precipitates from walls of beakers.....	Doz.	.50

RUBBER TUBING

No.

1341 Rubber Tubing, black, pure gum, light wall.

Inside dia.	$\frac{1}{8}$	5-32	3-16	$\frac{1}{4}$	5-16	$\frac{3}{8}$	$\frac{1}{2}$ in.
Foot	\$0.05	.07	.10	.12	.14	.20	.30

1342 Rubber Tubing, black, pure gum, heavy wall.

Inside dia.	$\frac{1}{8}$	3-16	$\frac{1}{4}$	5-16	$\frac{3}{8}$	$\frac{1}{2}$ in.
Foot	\$0.06	.12	.15	.20	.30	.40

1343 Rubber Tubing, red or antimony. Best quality.

Inside dia.	$\frac{1}{8}$	3-16	$\frac{1}{4}$	5-16	$\frac{3}{8}$	$\frac{1}{2}$ in.
Foot	\$0.05	.10	.12	.15	.20	.25

1344 Rubber Tubing, band, pure gum, light walls. For Gooch crucibles.

Width, flat	1°	1 $\frac{1}{4}$	1 $\frac{1}{2}$	1 $\frac{3}{4}$ in.
Foot	\$0.15	.20	.25	.30

1345 Rubber Tubing, white, heavy wall. Best quality, hand-made, for conducting gas, etc.; in 12-foot lengths.

Inside dia.	$\frac{1}{8}$	3-16	$\frac{1}{4}$	5-16	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{3}{4}$ in.
Foot	\$0.06	.10	.12	.15	.20	.25	.30	.40

1345a Rubber Tubing, white, light wall, hand-made. For connections.

Inside dia.	$\frac{1}{8}$	3-16	$\frac{1}{4}$	5-16	$\frac{3}{8}$	$\frac{1}{2}$ in.
Foot	\$0.05	.07	.10	.12	.15	.20

1346 Rubber Tubing, white cloth insertion, heavy wall.

Inside dia.	$\frac{1}{4}$	$\frac{3}{8}$ in.
Foot	\$0.15	.20

1347 Rubber Tubing, extra heavy walls. For vacuum pumps, etc.

Inside dia.	$\frac{1}{8}$	3-16	$\frac{1}{4}$	$\frac{3}{8}$ in.
Foot	\$0.10	.15	.25	.40

1348 Rules, of boxwood, 30 cm. and 12 inches..... \$0.20

1349 Rules, of boxwood, 60 cm. and 24 inches, four-fold..... .40

1350 Rules, Meter Sticks, 1 meter on one side in millimeters, and 39 inches in one-eighths on the other..... .40



1350a

1350a Sampler for concentrates or sand, etc.

Size	12	18	24	30	36 in.
Each	\$1.50	1.75	2.00	7.00	8.00

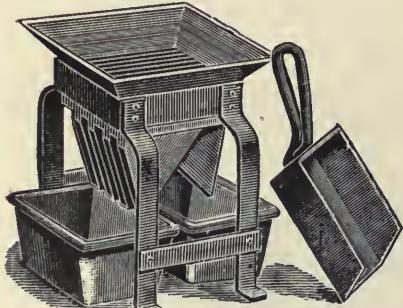
30 and 36-inch have T handles.

No. 1351 Samplers, "Jones Ore Sampler." Its construction facilitates quick and even sampling. It consists of hopper set in 4-legged support, scoop, and 4 sampling pans and brush. All parts can be easily cleaned. It is made in 4 sizes.

Size	4 x 4	6 x 6	8 x 10	10 x 18 in.
Trays	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{4}$	1 in.

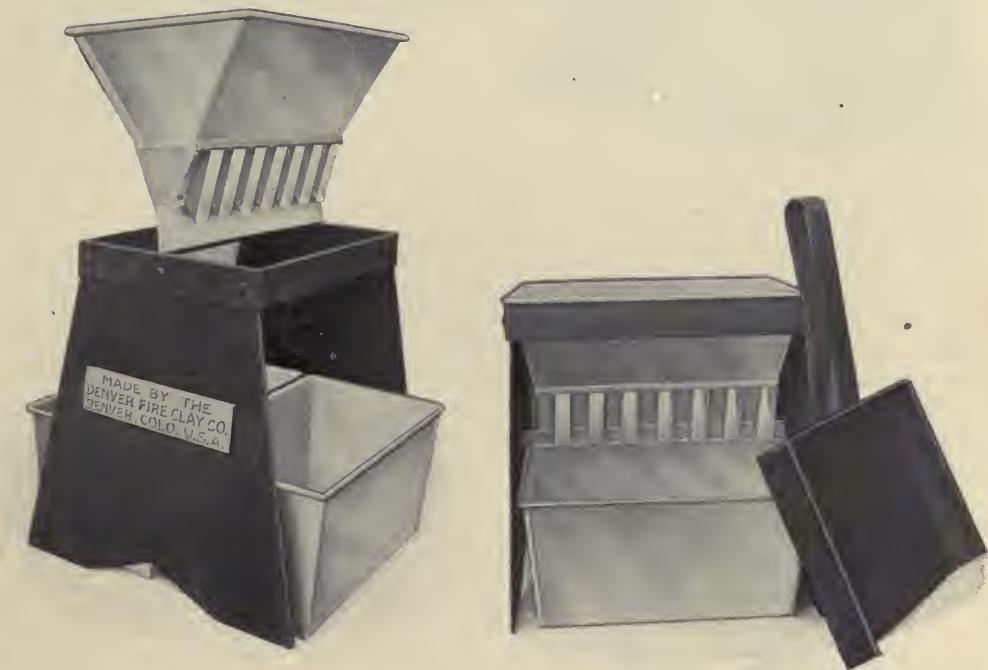
Each \$8.00 10.00 15.00 25.00

Extra Brushes for same, Each, \$0.30; Doz., \$3.00



1351

Case Improved Sampler



1351a

Code Word, "Casesam."

No.

1351a Sampler, "Case Improved."

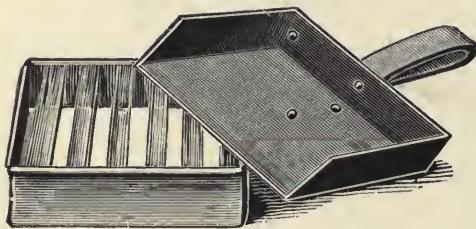
The advantageous features of this sampler over others of similar pattern are apparent from the above illustration.

The short division channels, which are accurately cut to an angle of 60°, makes it extremely simple to quickly and thoroughly clean; and the pan stop, through the center between the divisions, adds greatly to the rapidity with which the work of cutting down samples can be accomplished.

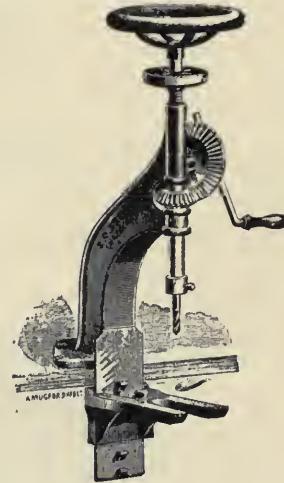
It is substantially constructed, and the handiest, most convenient and accurate sampler yet devised for hand manipulation.

Price, with four pans and scoop:

Size	4x4	6x6	8x10 in.
Trays	½	½	¾
Each	\$8.00	10.00	15.00



1352



1356

No.

1352 Sampler and Scoop. Trays $\frac{1}{2}$ in. wide.

Size	6x6	9x9	12x12 in.
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Each	\$1.50	2.50	3.00
1353 Samplers only	\$1.00	1.75	2.10
1354 Scoops only..	\$0.50	.75	.90

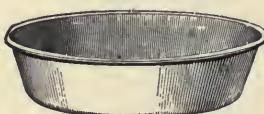
1355 Sampling Bags. Of duck, for ore, as used by mills, etc.

Size	6x10	6x14	9x15	10x21 in.
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Doz.	\$0.50	.75	1.25	1.50
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Sampling Bags, of Paper; see No. 1215.

1356 Sampling Drill, for drilling small samples of metals from bullion for assaying. It is 26 in. high and weighs 29 lbs.; neatly japanned..... \$10.00



1357



1357a



1358



1359

1357 Sampling Pans. For ore samples, of seamless tin.

Dia	5	6	7	8	10 in.
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Doz.	\$0.35	.40	.50	.70	.90
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1357a Sampling Pans, for ore samples, of enameled steel.

Dia.	5 $\frac{1}{4}$	6	6 $\frac{3}{4}$	7 $\frac{3}{4}$	10 in.
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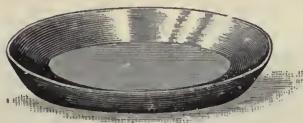
Each	\$0.15	.20	.25	.30	.35
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Doz.	1.50	2.00	2.50	3.00	3.50
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1358 Sampling and Mixing Horn. Bowl 5 x 1 $\frac{1}{2}$ in. at largest dia.. Each .30; Doz. \$3.001359 Sampling and Amalgamating Scoop. Russia iron, 5 x 4 $\frac{1}{2}$ in..... .40



1360



1361



1362

No.

1360 Sampling Scoops. Horn.

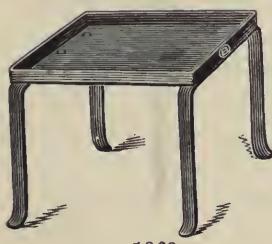
No.	1	2	3
Bowl	3 1/4 x 2 1/2	3 3/4 x 2 3/4	4 1/4 x 3 1/4
Doz.	\$1.25	1.60	2.25

1361 Sand Baths. Sheet iron, shallow.

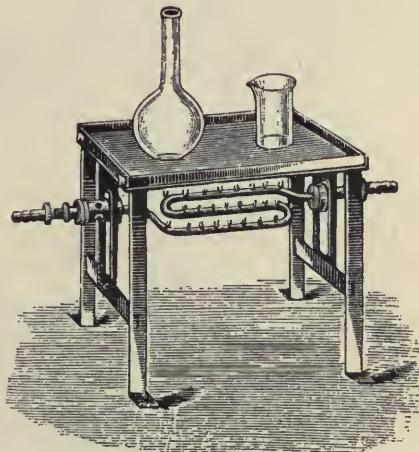
Dia.	3	4	5	6	8	10 in.
Each	\$0.10	.12	.15	.20	.30	.50

1362 Sand Baths. Sheet iron, hemispherical.

Dia.	4	5	6	8	10 in.
Each	\$0.15	.20	.25	.45	.70



1363



1364

1363 Sand Baths, or Hot Plate, an iron tray on 4 legs.

Size	6x8	8x10	10x12 in.
Each	\$2.00	2.25	2.50

1364 Sand Baths, Ruedorff's, of wrought iron with adjustable burner, 8 x 10 in... \$7.00

SCORIFIERS

Our Own Manufacture---Guaranteed.



1365

The Scorifiers manufactured by The Denver Fire Clay Company are one of our extremely high grade specialties, and are sold under our positive guarantee to be the best in the world.

The mixture entering their composition is the product of many years of careful experiments, and is such as to admit of no lead or other metallic absorption; will not crack in process and will not pit or leave any opening for retention of lead after completion of its work.

They are made in two shapes, known as the Regular and Bartlett styles, the latter being shallower and recommended for the scorification of heavy sulphide ores. Neither is the result of hasty conclusions, but designed with due regard to the laws upon which their particular purpose is based, and at the same time allowing for the maximum available muffle space to be utilized. They have stood the rigors of keen competition for many years and are today satisfactorily meeting the requirements of the varied conditions throughout the world to better advantage than ever before. We strongly recommend our scorifiers as being absolutely the best obtainable and without an equal of either domestic or foreign manufacture.

SIZE.		No. in Barrel.	Gross Weight.
1½ inches in diameter.....		3850	245
2 "	"	2000	290
2½ "	"	2000	302
2¾ "	"	1900	312
3 "	"	1400	295
3½ "	"	1000	292
4 "	"	800	280
4 "	"	600	274

No.	Scorifiers, D. F. C. Co.	Our Own Manufacture, Guaranteed.								
		Dia.	1½	2	2¼	2½	2¾	3	3½	4 in.
		Per 1000	\$12.00	12.00	12.00	13.00	16.00	20.00	25.00	30.00

1366	Scorifiers, D. F. C. Co.	Bartlett style, shallow bowl.			
		Dia.	2¼	2½	3 in.
		Per 1000	\$12.00	13.00	20.00

Examine your goods. None genuine unless stamped "Denver F. C. Co." They have many imitators, but no equals. Specify "Denver Fire Clay Co.," and get products of a house with a record who stand back of their goods.

The Denver Fire Clay Co. Standard Testing Sieves

TIN FRAMES WITH BRASS WIRE CLOTH.

Why you should Use The Denver Fire Clay Co. Screens

A screen test is of little value unless made with an accurate, square mesh testing sieve. You would not put much faith in measurements taken with a rule that had 10 inches to the foot—then why make a screen test with a sieve that is from 5 to 15 meshes off in the count?

Our screen is absolutely square in mesh and made from the same gauge wire both ways, therefore dependable in testing. As an example, 100 mesh screen will count 100 mesh to the inch both ways, while what is known as the "Commercial Grade" fine brass cloth is irregular in mesh and may count 100 mesh one way and be off from 5 to 15 meshes the other.

Uniform, square mesh testing sieves are an absolute necessity in making intelligent comparison of tests, therefore our screens are being adopted by users who appreciate the value of an exact screen analysis.



1371

The extended rim of each Sieve fits the top of another Sieve of the same diameter.

THE DENVER FIRE CLAY COMPANY.

No.

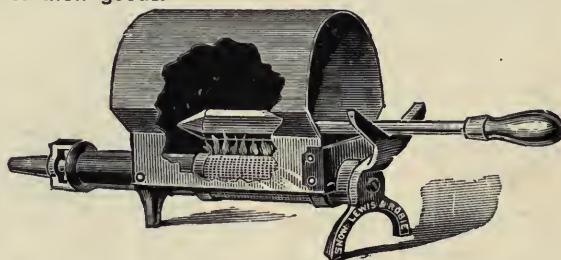
1371 Sieves, Brass Cloth, tin frames, with pan bottom.

No. of Meshes per Lin. Inch.	Number of Wire.	Size of Opening in Inches.	Price.		
			Diam. 8 In.	Diam. 10 In.	Diam. 12 In.
10	24	.0799	\$1.25	\$1.50	\$2.00
20	28	.0335	1.25	1.50	2.00
30	30	.0195	1.50	1.60	2.10
40	33	.0147	1.50	2.20	2.30
50 ✓	35	.011	1.50	2.25	2.50
60	36	.0091	1.75	2.50	2.75
70	37	.0077	1.75	2.50	2.75
80	38	.00675	2.00	2.75	3.00
90	39	.0061	2.00	3.00	3.20
100 ✓	40	.0055	2.50	3.25	3.50
120	42	.0043	3.00	3.50	4.50
150 ✓	44½	.0036	4.00	5.50	7.50
200 ✓	47	.002	6.00	8.00	10.00

Examine your goods. None genuine unless stamped "Denver F. C. Co." They have many imitators, but no equals. Specify "Denver Fire Clay Co." and get products of a house with a record who stand back of their goods.



1372



1374



1382

1372 Sieves, as above, 8 in. diameter, in nests of 7, viz.: 20, 30, 40, 50, 60, 80 and 100 mesh \$10.00

Note:—We also nest above to suit purchaser. Sieves of any other diameter made to order and charged at lowest figures.

1373 Sieve Covers for above.

For	8	10	12 in. Sieves.
Each	\$0.40	.50	.60



1383



1383a

1374 Soldering Iron Heaters, for gas \$1.50

1375 Soldering Coppers, with handles.

Weight	1	1¼	1½	2 lbs.
Each	\$0.60	.75	.90	1.20

1376 Sodium Spoons, with handles..... Each .40

1377 Slide Rule. See next page.

1381 Spatulas, bone. Best quality; length 5 in..... .15

1382 Spatulas, glass. With ground blade; length 6 in..... .20

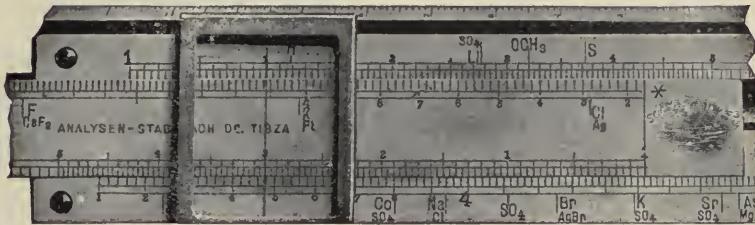
1383 Spatulas, horn. Best quality, very elastic.

Length	6	7	8 in.
Each	\$0.12	.15	.20

1383a Spatulas, horn. Double ends, superior quality.

Length	4	5	6	7	8	10 in.
Each	\$0.08	.10	.12	.15	.20	.35

Slide Rule, Chemists'



1377

No.
1377 Slide Rule, Chemists'.

It is the purpose of this instrument to effect a reduction of the time required for the calculation of Chemical Analyses to a few seconds, and at the same time to increase the accuracy of the results. The calculations for which it serves include multiplication, division, and the determination of various powers of numbers. The extraction of roots is also possible, but is somewhat more complicated and not required in a chemist's ordinary work.

CALCULATION OF ANALYSES.

This involves the use of proportion and may be expressed by the equation $\frac{F \times P}{S} = \text{percentage}$, in which F is the factor, P is the amount of substance found, and S is the quantity taken. As the factors are constant numbers they have a fixed place on the slide rule and are indicated by a mark on the scale. Certain elements are determined in different forms of combination and have consequently different factors. The marks corresponding to the factors are placed above the logarithmic divisions in order not to cause confusion. In the calculation the runner must always be employed. In the case of elements or atomic groups, which are always determined in one and the same form of combination, for example Carbon as CO₂, Hydrogen as H₂O, there is entered in large letters along with the factor the symbol of the element or atomic group. In the case of elements which may be determined in different forms of combination the symbols of these different forms are expressed by smaller letters. The fact that the factors appear distributed both on the rule and on the slide promotes clearness and facilitates the readings. Net \$9.00



1385



1389



1386



1390



1387



1392



1388



1394

No.

1384 **Spatulas, nickel, solid.** Spatula on both ends.

Length	5	6	7	8 in.
Each	\$0.40	.50	.60	.80

1385 **Spatulas, porcelain.** Spatula on both ends.

Length	4 $\frac{3}{4}$	5 $\frac{1}{2}$	7	8 in.
Each	\$0.20	.30	.35	.40

1386 **Spatulas, porcelain.** Stout, with knob.

Length	11	14	17 in.
Each	\$0.60	.80	1.00

Spatulas, platinum. See platinum Spatulas, No. 1267.1387 **Spatulas, steel, with cocoa wooden handle.** For mixing and dividing.

Blade	3	4	5	6	7	8	10	12 in.
Each	\$0.20	.25	.30	.35	.45	.60	.90	1.50

1388 **Spatulas, steel, "artists' palette knives."** Wooden handle.

Blade	3	4	5 in.
Each	\$0.30	.40	.50

1389 **Spatulas, steel, nickel-plated.** Steel handle.

Length	4	5	6	7	8	9 in.
Each	\$0.50	.55	.60	.70	.80	1.00

1390 **Spatulas, steel, solid, with knob on one end or with double ends.**

Length	6	8	10	12	14	16 in.
Each	\$0.20	.25	.35	.45	.60	.75

1391 **Sodium Spoons.** Metal screen bowl \$0.501392 **Spoons, Ivory.** For blow pipe work251393 **Spoons, Bone.** Best quality, 6 in.251394 **Spoons, Horn.** Best quality, with spatula end.

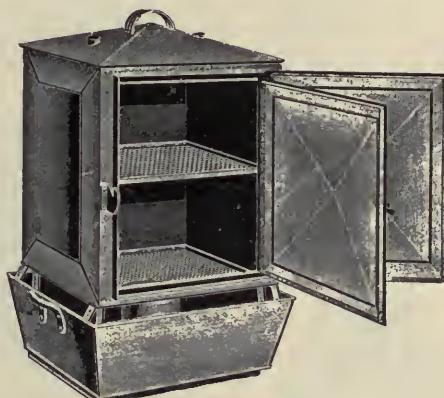
Length	4	5	6	8	10 in.
Each	\$0.10	.15	.20	.30	.40



1394a



1394b



1394b No. 136

No.

1394a **Sterilizers, Hot Air Ovens**, for sterilizing in **dry heat**, made of Russia iron, with double walls and connecting openings between the oven and the door, to secure a perfectly even circulation.

No. 1040.	9 inches high, 12 inches wide, 9 inches deep.....	\$12.00
" 1045.	9 " " 15 " " 9 " "	12.50
" 1050.	9 " " 18 " " 9 " "	14.00
" 1055.	12 " " 24 " " 12 " "	21.00
" 1060.	12 " " 9 " " 9 " "	15.00

Larger sizes quoted upon application.

1394b **Sterilizers, Arnold's**, for **Steam**, maintaining an unvarying temperature of 100° C. in all parts of the sterilizing chamber, without needing any care or attention.

No. 23.	10½ inches high, 9¾ inches dia., heavy tin, copper bottom.....	3.75
" 25.	12½ " " 11¼ " " "	5.00
" 33.	10½ " " 9¾ " " all copper.....	12.75
" 35.	12½ " " 11¼ " " "	16.50
" 136.	Square, Board of Health Pattern, of copper, with double walls, and double doors, 16 inches high, 12 inches wide, 12 inches deep....	40.00
" 134.	ditto, 14 inches high, 8 inches wide, 8 inches deep.....	35.00

Other forms and sizes quoted upon application.

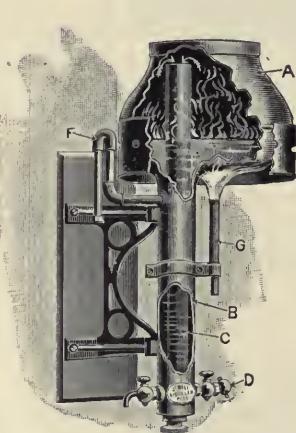


1395

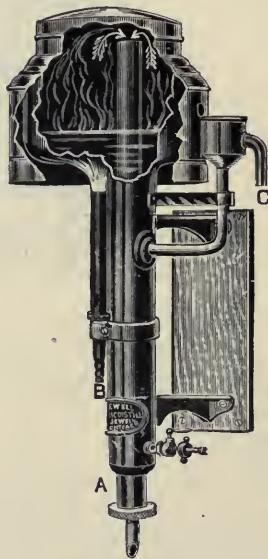
No.
1395

Stills, or Distilling Apparatus, for water, spirits, etc. A tin-lined copper retort, and zinc cooler, with block tin worm. All stills are tubulated and of superior make.

Capacity	$\frac{1}{2}$	1	2	3	5 gal.
Complete	\$10.00	12.00	14.00	20.00	25.00
Separate parts:					
Still	\$6.00	7.00	8.50	13.00	16.00
Condenser	4.00	5.00	5.50	7.00	9.00



1396

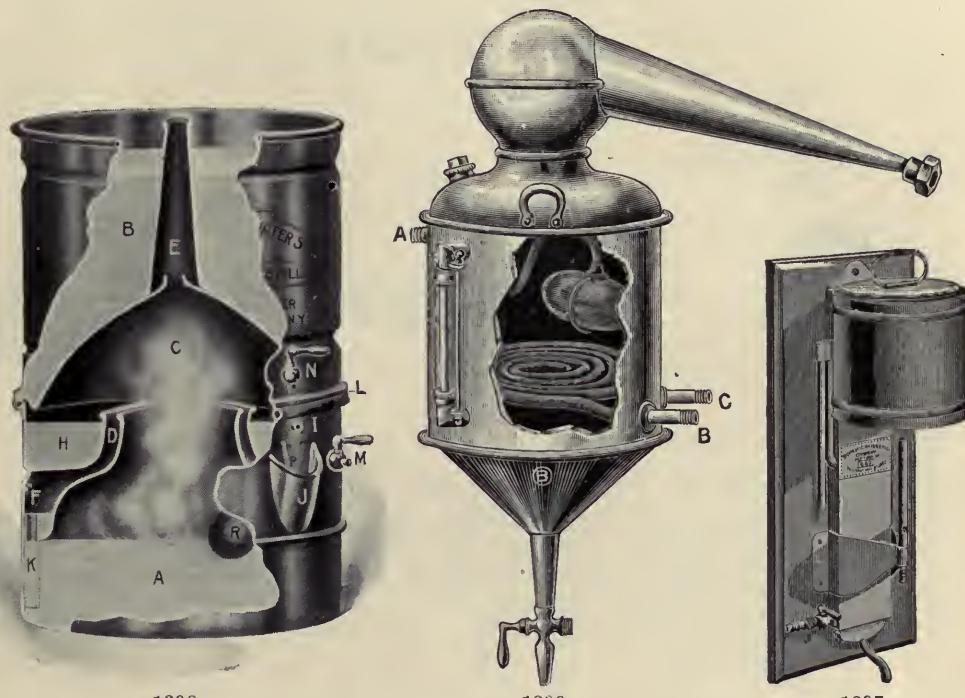


1396

1396 **Stills, "Jewell" Automatic Water Stills,** with gas burner; made of machined iron castings, finished in baked white porcelain enamel, inside and out.

Capacity per hour	$\frac{1}{2}$	1	$1\frac{1}{2}$ gallons.
Price	\$25.00	45.00	65.00 Net.

Larger sizes quoted on application.



1398

1399

1397

No.

1397 **Stills, "Domestic" Automatic Water Still.**
 (a) Capacity, 13 gals. in 24 hours \$15.00
 (b) Capacity, 32 gals. in 24 hours 25.00
 A consumes 6 cubic feet, b, 14 cubic feet gas per hour.

1398 **Stills, "Ralston" New Process Water Still.** Of copper, plated with pure block tin. Diameter, 9 in., height, 14 in. 12.00
 The Pura Germ-Proof Aerating Cap for same25

1399 **Stills,** for making distilled water by steam heat, made of heavy copper with steam coil near the bottom, provided with an automatic valve which controls the water supply, also water gauge and union to connect to Condenser. Very efficient and economical.

Connect water inlet at "A," steam inlet at "C" and outlet at "B." Stop-cock at bottom is to drain the still.

Made in two sizes: 3 gallons 5 gallons.

Price.....	\$30.00	\$40.00
------------	---------	---------

STOPCOCKS



1401



1402



1402

No.
1401

Stopcocks, brass. We furnish these with:

- a. Double ends, for tubing connections.
- b. One end for tubing, the other for male screw.
- c. One end for tubing, the other for female screw.
- d. Double male screws.
- e. Double female screws.
- f. Male and female screws.

$\frac{1}{2}$ -inch bore.....	Each	\$0.75
$\frac{1}{4}$ -inch bore.....	Each	1.00

1402 **Stopcocks, of glazed acid proof stoneware, straight or bent.**

Bore	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1 in.
Each	\$2.25	2.50	3.00	4.00



1410a



1410b



1411

1410 **Stopcocks, glass, heavy, for aspirators, Woulff bottles, etc. Straight or bent.**

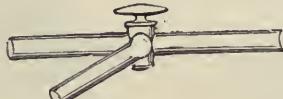
Bore	4	6	8 mm.
Each	\$1.25	1.50	2.00

1411 **Stopcocks, glass, Geissler's.**

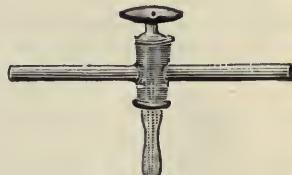
Bore	$\frac{1}{2}$	1	2	3	4	5	6	$7\frac{1}{2}$	10 mm.
Each	\$0.70	.80	.90	1.00	1.35	1.85	2.50	3.50	5.50



1412



1413



1413a

No.

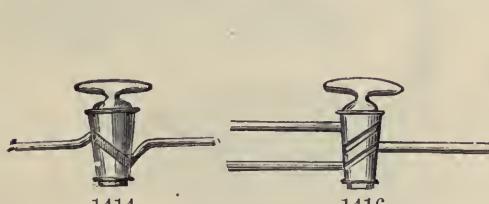
1412 Stopcocks, glass, Geissler's. Angle of 45 degrees, bore 2 mm..... \$1.50

1413 Stopcocks, glass, Geissler's. 3-way.

Bore	1	2	3	5 mm.
Each	\$1.00	1.20	1.50	2.00

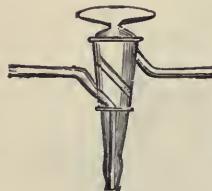
1413a Stopcocks, glass, Geissler's. 3-way, new style.

Bore	1	2	3	5 mm.
Each	\$1.25	1.50	1.75	2.50



1414

1416



1417



1418

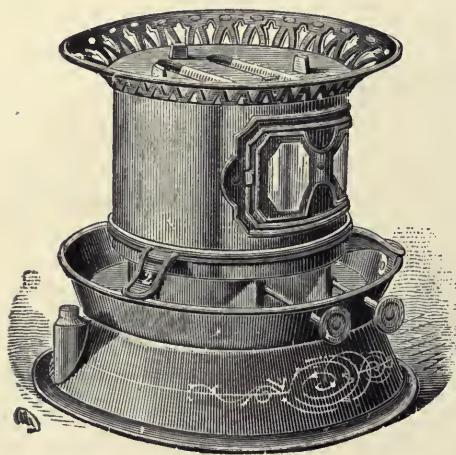
1414 Stopcocks, glass, G. & F., new style, 2 mm. bore..... \$1.20

1415 Stopcocks, glass, G. & F., new style, 2 mm. bore, with mercury seal..... 2.50

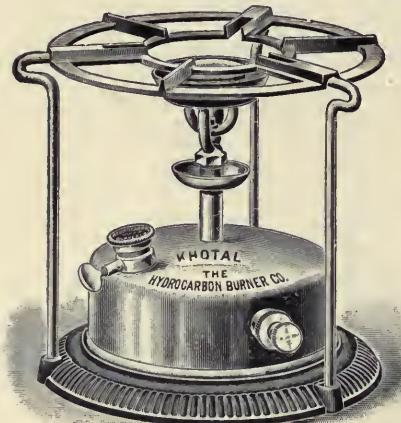
1416 Stopcocks, glass, G. & F., new style, 3-way, bore 2 mm..... 1.50

1417 Stopcocks, glass, G. & F., new style, with downway outlet, bore 2 mm.... 1.60

1418 Stopcocks, hard rubber, bore $\frac{1}{8}$ -inch..... .50



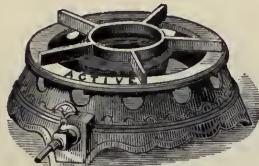
No.	1421		1422
Stoves, for kerosene. "Improved Summer Queen," with water pan to keep oil reservoir cool.			
With	1	2	3 burners.
Burner	3	3	4 in. wide.
Each	\$1.80	2.50	4.00
1422 Stoves, for kerosene. "The American."			
With	1	2	3 burners, 4½ in. wide.
Each	\$1.00	2.00	3.00



1423	Stoves, for kerosene. "Khotal." Of heavy polished brass. It burns kerosene without any wick. Complete with detachable tripod frame....	\$5.00
1423a	Stoves—Alcohol, Barthel's. These lamps are superior to most other alcohol lamps or stoves, as they manufacture their own gas by vaporizing the alcohol. No wick is used; safe, smokeless, size of flame readily adjusted. Substantial in construction. Reasonable in price and with Denatured Alcohol (which is entirely suitable for use), economical of maintenance. One filling of the reservoir (about 1 pt.) of the single burner lamp will last with full flame about 1½ hours, with medium flame 5 to 6 hours.	
Price of single burner stove, japanned, each		

Price of single burner stove, japanned, each 4.00
 Price of single burner stove, nickel-plated..... 5.00
 Price of double burner stove, japanned, 2¼ pt. cap..... 6.00





1424 No. 3



1424 No. 4

No.	Stoves, for gas. "Active."				
1424	No. 3, single, 4½ in. high, 8½ in. diameter.....				\$1.75
	No. 4, double, 4¼ in. high, 21 in. long.....				5.00
1424a	Stoves, for gasoline.				
	With	1	2	3 burners.	
	Each	\$3.50	5.00	6.50	



1424a



1427



1428



1429

1425	Stove Wicks, to fit stoves Nos. 1421 and 1422.				
	Size	3	4	4⅓ in. wide.	
	Doz.	\$0.30	.40	.40	

Stoves; see, also, Burners, page 108, and Lamps, page 212.

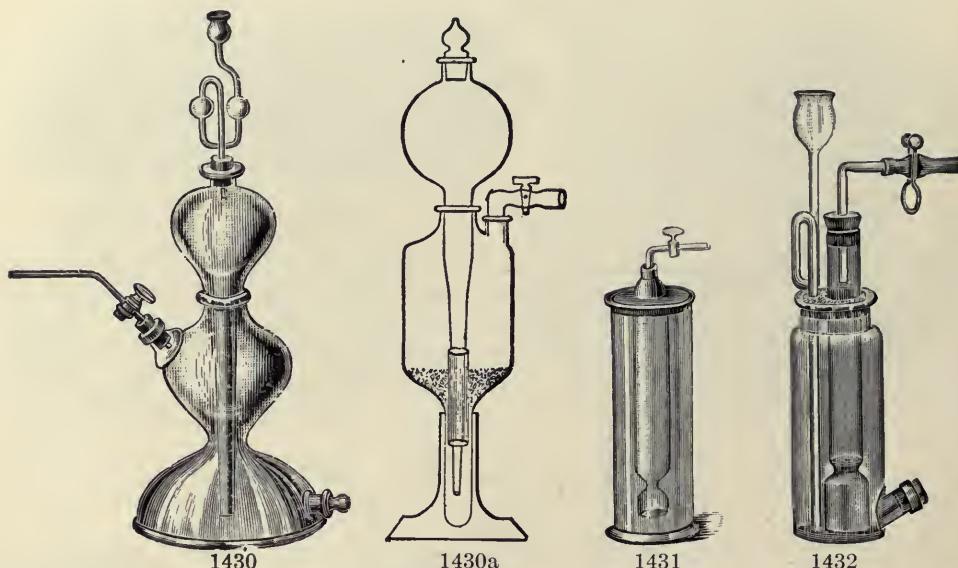
1426	Streak Plates; for mineralogists and for arsenic test.				
	Size	3x1½	4x2½ in.		
	Each	\$0.25	.40	Royal Meissen.	
	Each	.10	.20	Thuringian.	

1427	Strainers, porcelain, hemispherical form.				
	Dia.	2½	3¼	4	5
	Each	\$0.30	.35	.40	.50

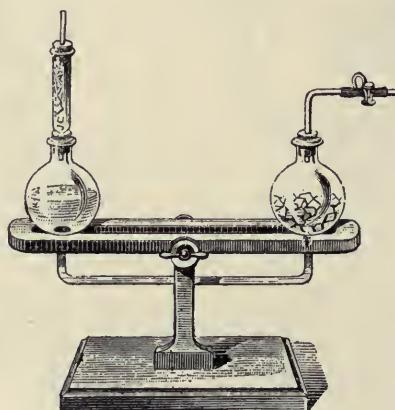
6 in. .75

1428	Strainers, porcelain, flat bottom, straight sides.				
	Dia.	4½	8	10	12 in.
	Each	\$0.60	1.00	1.25	2.00

Strainers, porcelain, with handle, 6 in. diameter, 6 in. high \$2.25



No.					
1430	Sulphuretted Hydrogen Generator, Kipp's form.				
	Size	$\frac{1}{2}$ pt.	1 pt.	1 qt.	$\frac{1}{2}$ gal.
	Each	\$3.50	4.00	5.00	6.50
1430a	Sulphuretted Hydrogen Generator, Kipp's improved form, of Bohemian glass, one quart capacity				\$10.00
1431	Sulphuretted Hydrogen Generator, Bonn form.				
	Size, 12 in. high, 3 in. dia.....				4.00
	Size, 24 in. high, 5 in. dia.....				8.00
1432	Sulphuretted Hydrogen Generator, Colorado form. Quart size, giving constant supply.....				1.50



1433	Sulphuretted Hydrogen Generator, Babo's form. Very handy where a frequent supply of small quantities of H_2S is needed, complete, mounted on improved stand, with rubber stoppers, pinchcocks and delivery tube	\$2.75
	The semi-circular tube alone.....	1.25

SUPPORTS



1440

No. 1440 Revolving, Quick Filtering Funnel Support. Code Word, "Sup."

This illustration shows our new support, which is of great advantage in making a large number of filtrations in a small space.

Fifteen filtrations can be made from one position in a space of two feet, and by using six of these supports 90 filtrations can be carried on simultaneously on a twelve-foot laboratory table.

Construction:

The upper circular piece holding the funnels is eighteen inches in diameter and is bored for fifteen three-inch funnels.

The lower circle is six inches wider; the additional space is to give room for the two vessels containing the filtrate and filter supply.

The two circles are rigidly fastened to the center post and cannot get out of their relative positions. The whole revolves on a pivot fastened to the base (not shown), so that from one position the chemist can manipulate all funnels.

The circles are heavily ironed underneath to prevent cracking, and the construction throughout is very substantial.

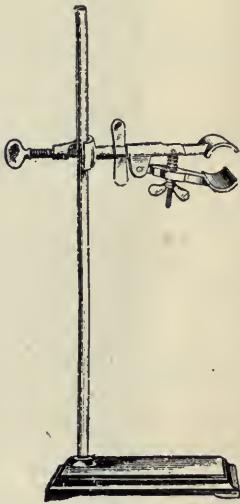
Price \$10,000



1441



1442



1443

No.

1441 **Supports, triangular base and rod only, for use with any clamp.**

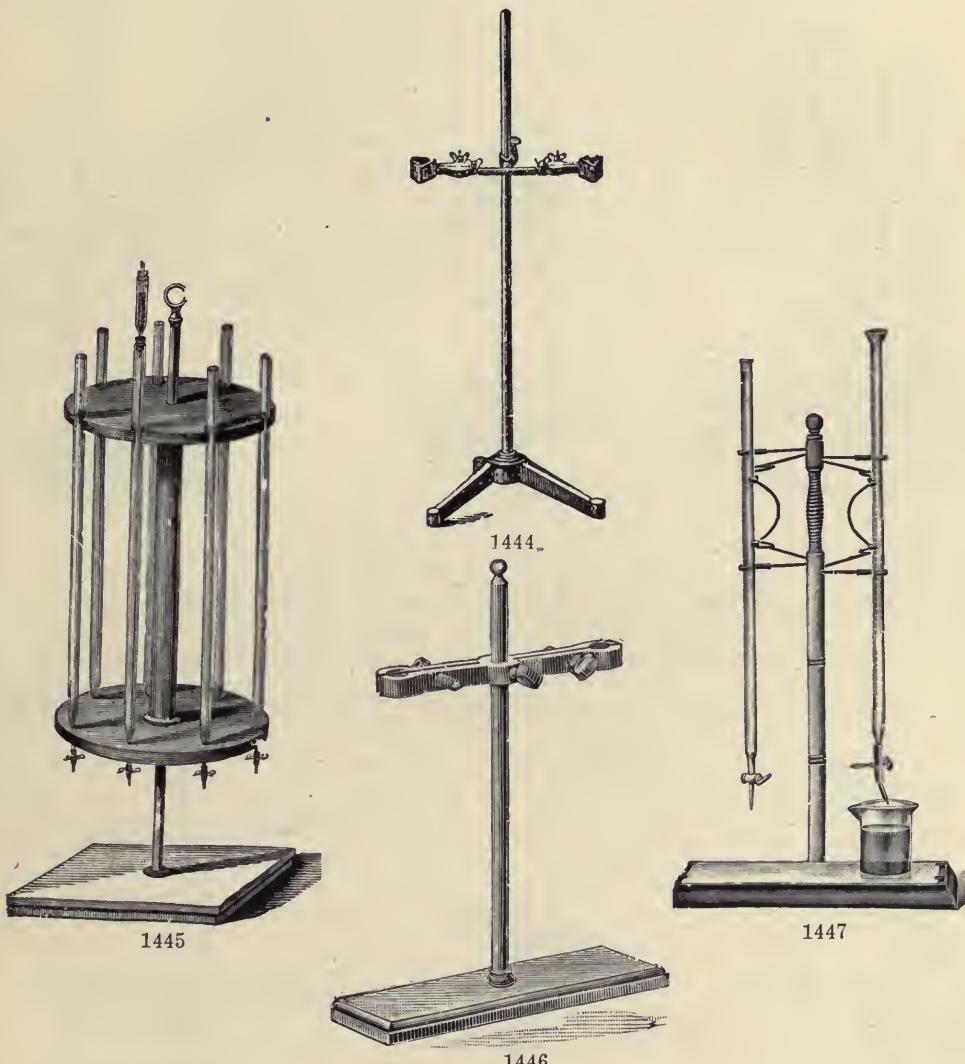
Size	Small.	Medium.	Large.	Extra Large.
Rod	16	20	24	36 in.
Each	\$0.35	.50	.75	1.00

1442 **Supports, rectangular base and rod only; for use with any clamp. Length of rod same as No. 1441.**

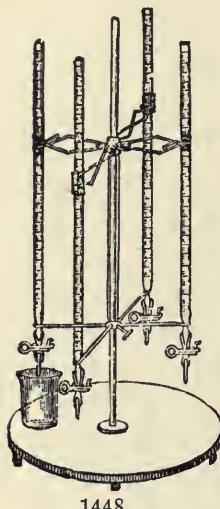
Size	Small.	Medium.	Large.	Extra Large.
Base	4x6	5x8	6x9	7x10 in.
Each	\$0.30	.40	.65	1.00

1443 **Supports, for burettes; iron base, rod and clamps.**

With	1	2	3 clamps.
Each	\$0.80	1.20	1.60



No.				
1444	Supports, for burettes, iron with one double Hofmann Clamp.....			\$1.20
1445	Supports, for burettes, wood, revolving, holding 8 burettes			4.00
1446	Supports, for burettes, hard wood clamp, lined with cork.			
	For 1 2 burettes.			
	Each \$0.85 1.25			
1447	Supports for burettes, Chaddock's. Hard wood base with square milk glass plate, ground to write on, clamp of japanned spring wire on turned maple upright, thumb opens the rubber-covered V-shaped jaws, which close upon the burette and hold it firm and true.			
	For 1 2 3 burettes.			
	Each \$2.00 3.00 5.00			



1448



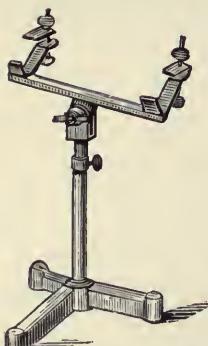
1449



1450

No.

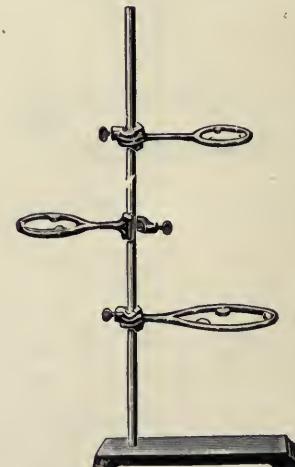
1448	Supports, for 4 burettes; solid porcelain base, revolving clamps; a very desirable support	\$7.00
1449	Supports, for condensers; iron, with universal clamp; height adjustable...	3.00
1450	Supports, for condensers; iron, with Bunsen's large clamp	2.00



1451



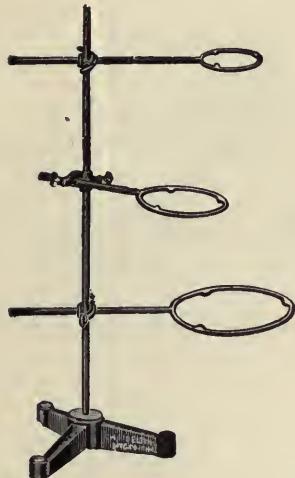
1451a



1452

1451	Supports, for condensers; iron, with universal movement.....	\$3.00
1451a	Supports, for condensers; wood, for all sizes.....	1.50
1452	Supports, for dishes, flasks, retorts, etc., "Ring Stands," rectangular base.	

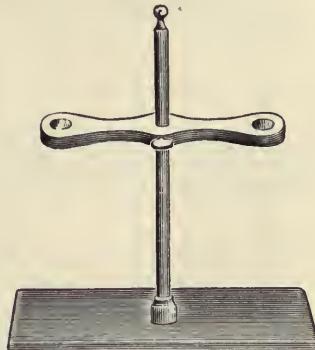
Rings	1	2	3	4
Each	\$0.35	.45	.65	1.10



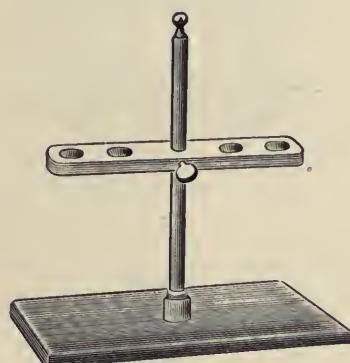
1454



1455



1456



1457



1458



1458a

No.

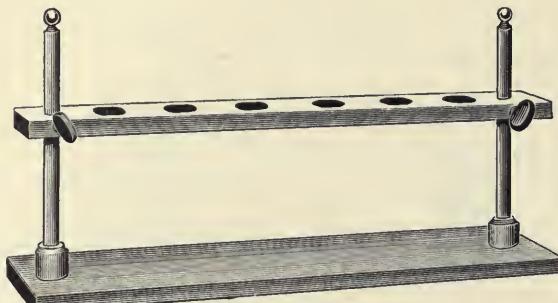
1453 Supports, for dishes, flasks, retorts, etc., "Ring Stands," triangular base,
same price as No. 1452.

1454 Supports, for dishes, flasks, retorts, etc., with extension rings.

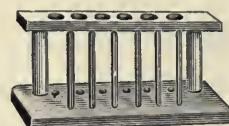
Rings	2	3	4
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Each	\$1.00	1.50	2.00
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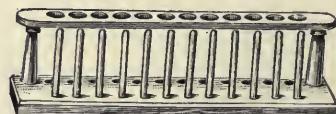
1455	Supports, for funnels, wood, with 1 arm.....	\$0.80
1456	Supports, for funnels, wood, with double arm.....	.90
1457	Supports, for funnels, wood, 1 double arm for 4 funnels.....	.90
1458	Supports, for funnels, iron, with 3 wood-lined rings.....	1.50
1458a	Supports, for funnels, hardwood, with iron clamp; for 4 funnels; can be attached to any retort stand.....	.60



1459



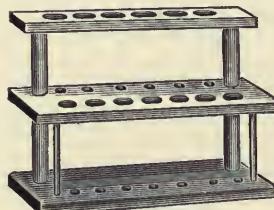
1461



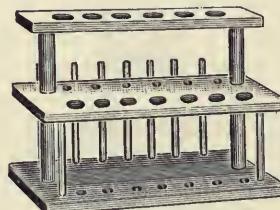
1462

No.

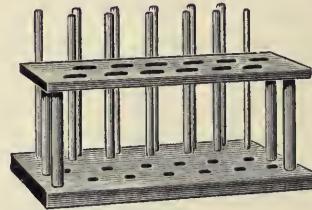
1459	Supports, for funnels; height adjustable, 6 funnels in one line.....	\$2.00
1460	Supports, for 12 test tubes in one row without pins, $\frac{7}{8}$ -in. holes.....	.40
1461	Supports, for 6 test tubes, with pins, $\frac{7}{8}$ -in. holes.....	.45
1462	Supports, for 12 test tubes in one row, with 12 pins, heavy base, $\frac{7}{8}$ -in. holes	.60



1463



1464

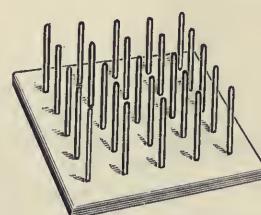


1465

1463	Supports, for 13 test tubes in two shelves, $\frac{7}{8}$ -in. holes.....	\$0.45
1464	Supports, for 13 test tubes in two shelves, with 7 pins, $\frac{7}{8}$ -in. holes.....	.60
1465	Supports, for 12 test tubes in two rows, with 12 pins, for large tubes, $1\frac{1}{4}$ -in. holes	1.00

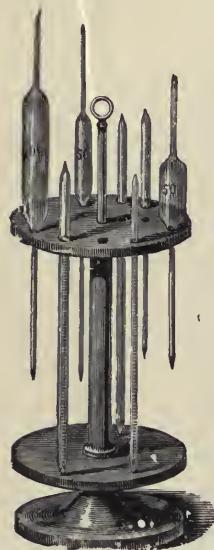


1466

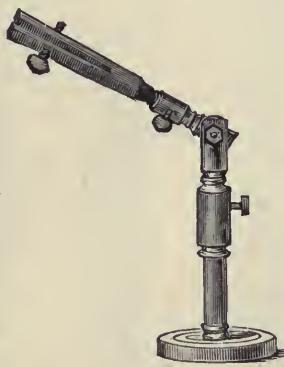


1467

1466	Supports, for 12 extra large tubes, $1\frac{1}{4}$ -in. holes.....	\$1.50
1467	Supports, for drying test tubes, with 25 pins.....	1.00



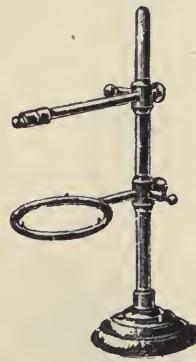
1468



1469



1470



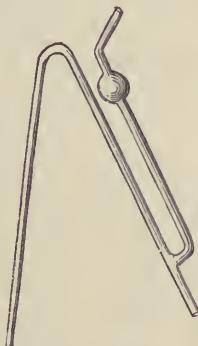
1471

No.

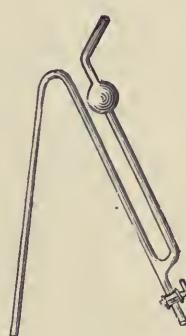
1468	Supports, for pipettes, wood, revolving, holding 12 pipettes.....	\$2.50
1469	Supports, Shellbach's, universal, wood.....	2.00
1470	Supports, Classen's, with two clamps.....	4.00
1471	Supports, Classen's, of metal, with 1 clamp and 1 ring.....	4.00



1472



1473



1474



1475

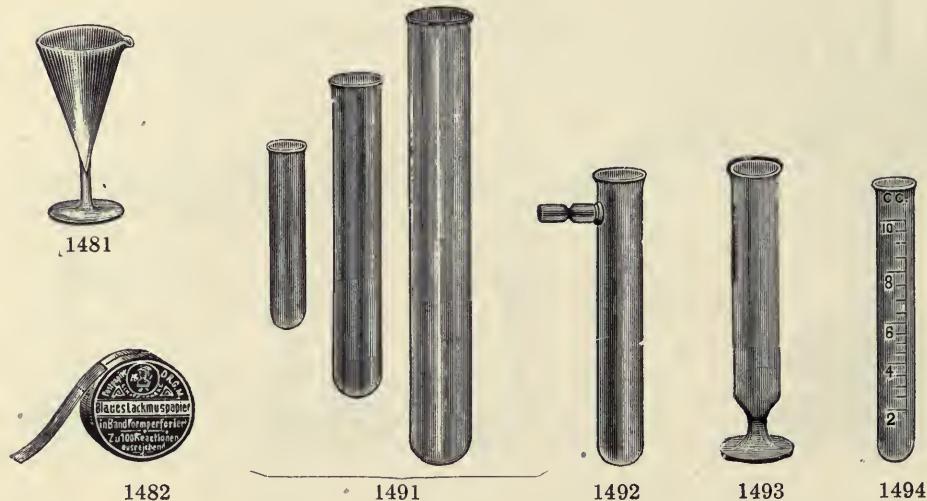


1476

1472	Support Table, adjustable, 12-inch	\$1.50
1473	Syphons, glass, with suction tube. Length 8 12 18 24 30 in. Each \$0.30 .35 .40 .60 .80	
1474	Syphons, glass, with Geissler's glass stopcock and suction tube. Length 8 12 18 24 30 in. Each \$1.10 1.25 1.40 1.60 1.80	
1475	Syphons, glass, to take out samples from barrels, etc., so-called "glass thieves," 36 inches long.....	1.20
1476	Syphons, glass, with one handle. Capacity 250 cc.....\$0.50; 500 cc. .60	

TEST TUBES

FREE FROM LEAD.



No.							
1481	Test Glasses, with lip, coming to fine evenly coned point.						
	Capacity	1	2	4	6	8 oz.	
	Each	\$0.15	.20	.25	.30	.35	
1482	Test Paper, blue and red Litmus and Turmeric.						
	In small books					Each, \$0.05; Doz.	\$0.50
	In sheets					Each, .05; Quire	.60
	In tape form, perforated strips, in metal box; per box of 100 strips, red or blue .....						.10
1483	Test Paper, Squibb's Litmus, in vials, blue, red and neutral.....					Vial	.15
						Doz.	1.75
1491	Test Tubes, best German glass, well annealed, free from lead, each piece wrapped in paper.						
	Size	3x $\frac{3}{8}$	4x $\frac{1}{2}$	5x $\frac{1}{2}$	5x $\frac{5}{8}$	5x $\frac{3}{4}$	6x $\frac{5}{8}$ in.
	Doz.	\$0.15	.20	.25	.25	.30	.30
	Gross	1.50	2.00	2.25	2.50	2.60	2.80
	Size	6x $\frac{3}{4}$	6x1	7x $\frac{7}{8}$	8x1	9x1	10x1 in.
	Doz.	\$0.30	.40	.45	.60	.80	1.20
	Gross	3.00	4.50	4.50	6.00	8.00	10.00
1492	Test Tubes, with side neck.						
	Length	5	6	7	8 in.		
	Doz.	\$0.75	.85	1.00	1.30		
1493	Test Tubes, on foot.						
	Height	5	6	7	8 in.		
	Doz.	\$0.75	1.00	1.25	1.50		
1494	Test Tubes, graduated; capacity 10 cc. in 1-10.....						.40
	Test Tubes, of hard glass; see Ignition Tubes, No. 1585.						
1495	Test Tube Caps, of rubber, for bacteriological purposes.						
	$\frac{3}{4}$ in. diameter.....					Doz.	.30
	1 in. diameter.....					Doz.	.40

THERMOMETERS

Made of Jena Normal Glass; best European manufacture; all provided with Air Bulbs.



1501



1502



1503

No.

1501 Thermometers, chemical; scale engraved on stem, with white back, very exact; in pasteboard case.

Grad. to	100	150	200	250	360° C.
Each	\$1.10	1.20	1.30	1.40	1.60
Grad. to	212	400	600° F.		
Each	\$1.10	1.30	1.50		

1502 Thermometers, chemical; milk glass scale, enclosed in glass tube; in pasteboard case.

Grad. to	100	200	250	360° C.
Each	\$1.10	1.30	1.40	1.60
Grad. to	212	400	600° F.	
Each	\$1.10	1.30	1.50	

1503 Thermometers, chemical; paper scale, enclosed in glass tube, in pasteboard case.

Grad. to	100	200	250° C.
Each	\$0.60	.75	1.00
Grad. to	212	400° F.	
Each	\$0.70	.80	

1503a Thermometers, paper scale, only 8 inches long, reading to 100° C. or 212° F. Each \$0.50

1504 Thermometers, chemical; with two scales engraved on the stem.

Registering 100° C. and 212° F.....	2.00
Registering 200° C. and 400° F.....	2.25
Registering 300° C. and 600° F.....	2.50

1505 Thermometers, chemical; filled with nitrogen, to prevent the separation of the mercury; engraved on the stem, 0° to 400° C. or 0° to 700° F...

2.50

1506 Thermometers, Normal; filled above mercury with carbonic acid. With zero point, graduated on tube 180° to 550° C. or 200° to 1000° F.....

10.00

1507 Thermometers, chemical; engraved on stem.

Grad. from 0° to 50° C. in 1-10°.....	3.00
Grad. from 0° to 100° C. in 1-5 °.....	3.25
Grad. from 0° to 100° C. in 1-10°.....	4.00
Grad. from 100° to 200° C. in 1-5 °.....	3.50
Grad. from 100° to 200° C. in 1-10°.....	4.00

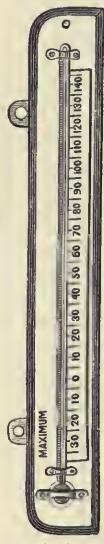
SPECIAL THERMOMETERS MADE TO ORDER IN OUR GLASS
BLOWING DEPARTMENT.



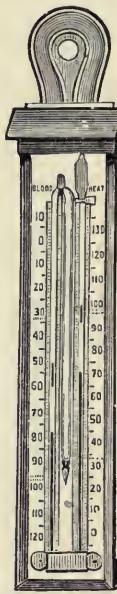
1510



1512



1514



1515



1516

No.

1508 Thermometers, Anschuetz'; Jena Normal glass. Standard set for chemical work, especially for fractional distillations; length 10 to 14 cm., dia. 6 mm. Each instrument has ring for suspending. Nos. 4 to 7 are filled with nitrogen.

Set as below, graduated in $\frac{1}{2}^{\circ}$, in fine leather case..... \$30.00
 No. 1, from 10° to 55° C. No. 5, from 195° to 265° C.
 No. 2, from 45° to 105° C. No. 6, from 240° to 310° C.
 No. 3, from 96° to 160° C. No. 7, from 295° to 360° C.
 No. 4, from 140° to 220° C.

1509 Thermometers, chemical, graduated on stem, and this one again enclosed in glass tube to prevent graduation from wearing off.

Grad. to 150° C. 400° F.

Each \$2.00 2.00

1510 Thermometers, technical; in armored case to protect stem from breaking when thrown into vessels.

Grad. to 360° C. 600° F.

Each \$4.00 4.00

1511 Thermometers, chemical; bent at right angles, scale enclosed in glass tube.

Grad. to 100° C. 212° F.

Each \$2.50 2.50

1512 Thermometers, Incubators; graduated from 10° to 50° C. $\frac{1}{2}$ 2.00

1513 Thermometers, "Minimum;" 10 in., boxwood, finely polished..... 1.50

1514 Thermometers, "Maximum;" 10 in., boxwood, finely polished..... 1.50

1515 Thermometers, "Maximum and Minimum;" combined in one instrument.. 3.60

1515a Thermometers, "Maximum and Minimum;" U. S. Weather Bureau pattern, mounted on one board..... 10.00

1516 Thermometers, in Japanned tin frames, good quality.

Length 8 10 12 in.

Each \$0.30 .40 .50

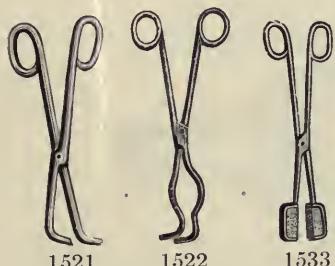
1517 Thermometers, Floating, dairy, $0-150^{\circ}$ F..... Each, 20c; Doz. 2.00

1518 Thermometers, Floating, paper scale, 8 in. long, 100° C. or 220° F..... .40

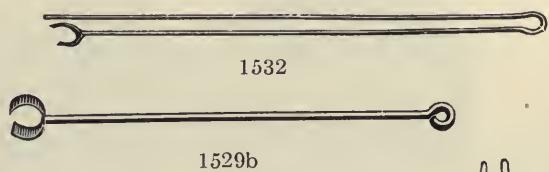
1518a Thermometers, Floating, paper scale, 12 in. long, 100° C. or 212° F..... .50

1519 Thermometers, Household, 10 in. long, on cherry back..... 1.00

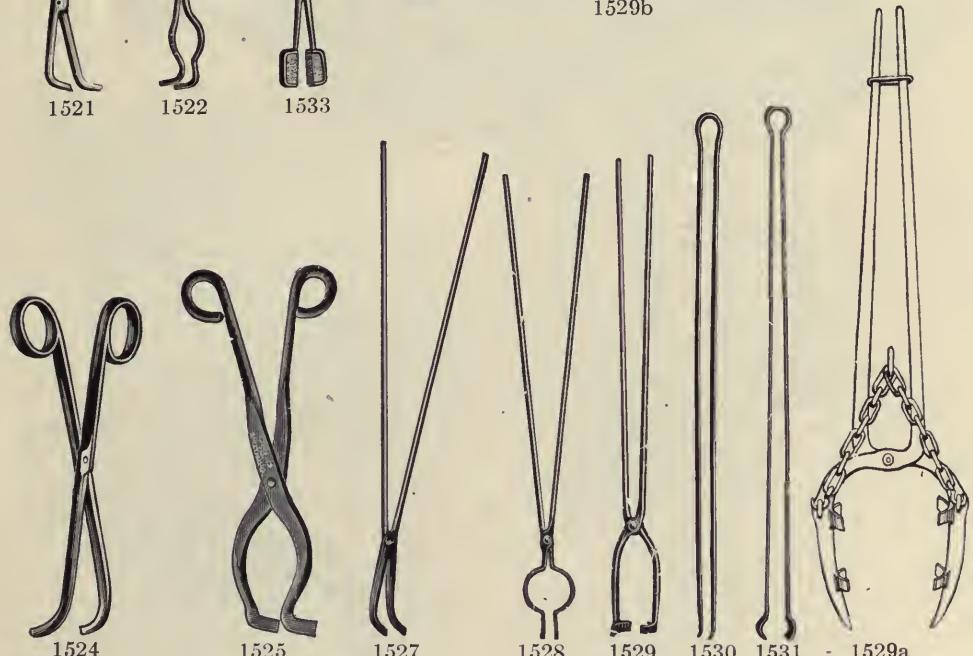
1520 Thermometers, Brewers', 12 in. long, copper cup case..... 2.50

TONGS

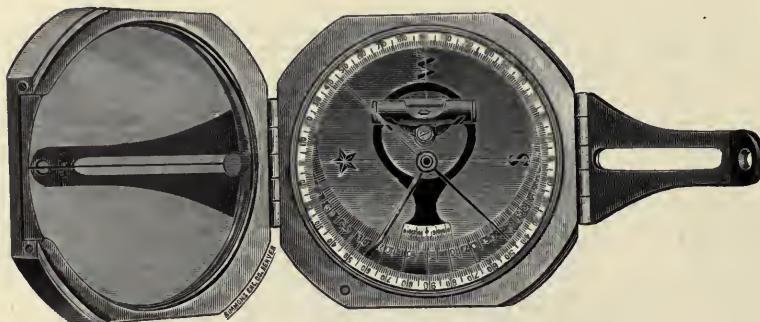
1533a



1529b



No.						
1521	Tongs, crucible, forged steel, single bent, nickel-plated, 9 in. long.....					\$0.70
1522	Tongs, crucible, forged steel, double-bent, nickel-plated, 9 in. long.....					.80
1523	Tongs, crucible, same as No. 1521 or 1522, with heavy platinum shoes. Price according to weight of platinum, approximate price.....					8.00
1523a	Tongs, crucible, pure nickel, double bent, strong, 9 in. long.....					3.00
1523b	Tongs, crucible, aluminum, double bent, light, 8 in. long.....					1.00
1524	Tongs, crucible, rod iron, single bent, japanned, 9 in. long.....					.30
1525	Tongs, crucible, rod iron, double bent, japanned, 9 in. long.....					.40
1526	Tongs, crucible, rod iron, double bent, japanned, 18 in. long.....					1.00
1527	Tongs, crucible, steel, single bent, 30 and 36 in. long.....					1.50
1528	Tongs, crucible, steel, double bent, 30 and 36 in. long					1.50
1529	Tongs, crucible, steel, double bent, for lifting crucibles vertically, 36 inches long					3.50
1529a	Tongs, crucible, used when lifting black-lead or other heavy crucibles with a crane, so-called "basket tongs." For crucibles Nos. 10 to 20 25 to 50 60 to 100 125 to 150 Each \$12.00 14.00 18.00 25.00 Larger sizes to order.					
1529b	Tongs, crucible, steel, crucible lifter, to take crucibles of any size up to 30 grm. 40 inches long, each.....					1.00
1530	Tongs, cupel, steel, light, 30 and 36 in. long.....					1.00
1531	Tongs, cupel, steel, light, with flat rounded ends, 30 and 36 in. long.....					1.00
1532	Tongs, scorifier and crucible, steel, light, 30 and 36 in. long.....					1.00
1533	Tongs, for Matrasses and flasks, brass, cork-lined, 7 in. long.....					1.00
1533a	Muffle Scrapers, 36 in. long.....					.60
	Tongs, any size made to order.					



1534

No.
1534

Transit, Brunton Patent Pocket Mine Transit. The cut illustrates a new pocket instrument which furnishes means for performing, within the limits of accuracy imposed by its size and construction, the operations for which the ordinary transit is used. The instrument has been designed especially to meet the wants of mining engineers, mine managers and superintendents, but its peculiar features render it admirably adapted to the requirements of geological field work, the taking of topography, and, in short, to any purpose for which a light pocket instrument is desirable, and where a moderate degree of accuracy will suffice.....Net \$25.00
Leather carrying case..... 2.00

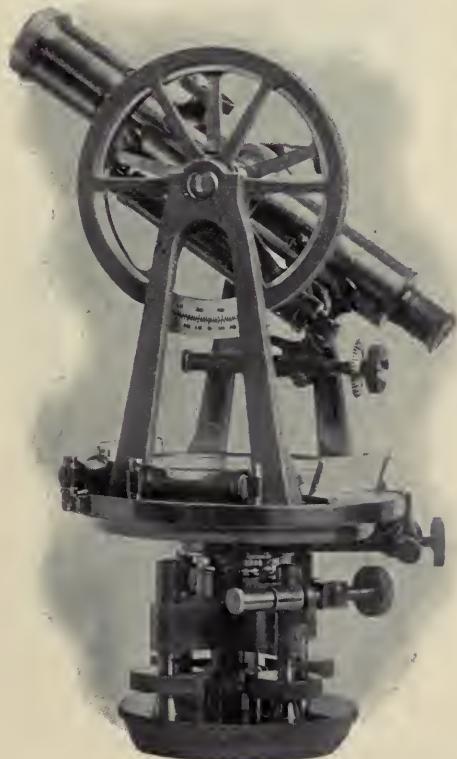


1535

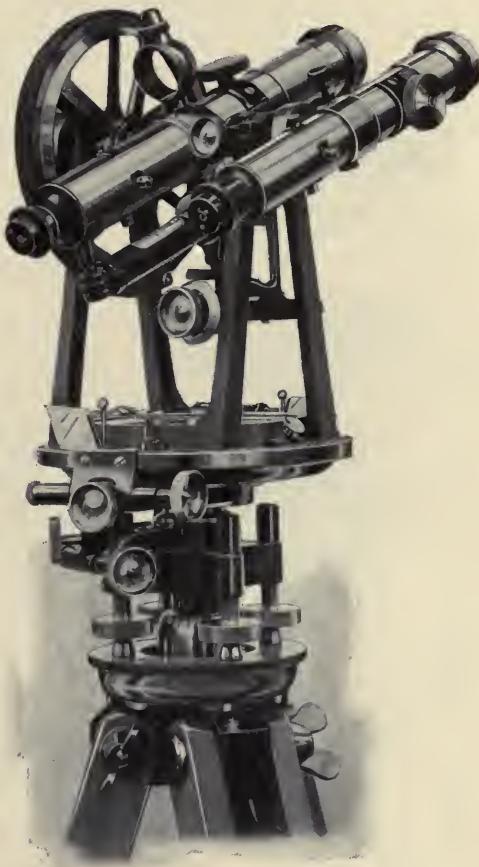
1535

Transit, Verschoyle Patent Transit. This instrument combines the useful features of Abney Level Prismatic Compass and Clinometer. The distinguishing feature of the instrument is that owing to its novel construction, only one observation is necessary to obtain both the magnetic bearing and the vertical angle of any distant point. It is unexcelled for rapid topographical work and working in constrained positions. It is constructed in such manner as to withstand the hard usage an instrument of this kind is liable to receive. Figure shows the instrument with sight-arm extended ready to make an observation. \$35.00
With block angle piece and collapsible tripod..... 45.00

Ainsworth's Precision Transits



Type BD



Type BF

No.

1538 **Transit, Ainsworth Precision:**

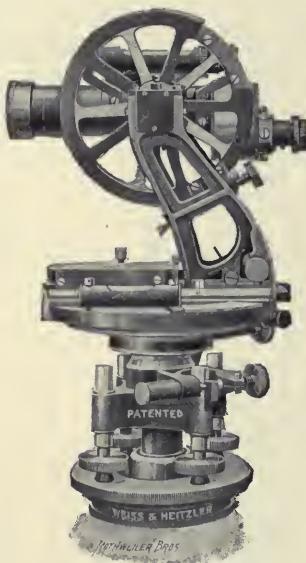
Type BD precision transit with 5 in. limb, 4½ in. verticle circle, 10 in. erecting telescope, gradimeter, 3½ in. compass variation plate complete in mahogany carrying case, with extension tripod. Price.....\$250.00

Type BE precision transit; same as above, but with 8 in. auxiliary side telescope for vertical sighting. Price..... 290.00

Type BF precision transit; same as type BD, but with 8 in. interchangeable auxiliary telescope for vertical sighting. Price..... 310.00

Mountain and Mine Transit

As Designed and Made by WEISS & HEITZLER



Cut 1

Shows Transit for general use.

Center of Telescope over
center of Instrument.



Cut 2

Shows Transit for mine work.

Telescope clears plate
at 90°.

No.

1539 **Transit, Mountain and Mine:**

GENERAL DESCRIPTION AND EXTRAS.

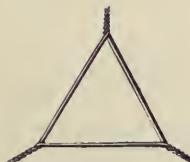
Dimension of horizontal limb $5\frac{1}{4}$ ". Double opposite vernier reading to 1 minute. Vertical circle reading to 1 minute. Graduations all on solid silver. Sensitiveness of vials 1 division equal to 1 minute of arc.

Telescope aperture 1 1-16". Magnification 17. Fixed Stadia hairs. Abbé prism system. Erect image. Inverted telescope will be substituted if desired, but it will not have the same magnification, because focus will be shortened.

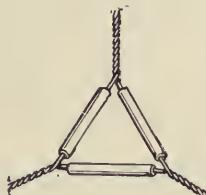
Finish of instrument, bright or black, as ordered. U Standard japanned. Needle 2 5-16".

Price of instrument complete with extension tripod, box, plumb bob, key and adjusting pins.....	\$350.00
Diagonal prism, extra	8.00
Shade for illuminating cross wires.....	4.00
Plummet lamp made of bronze and hard steel point. Weight 15 oz.....	8.00
Leather case with shoulder straps.....	12.00

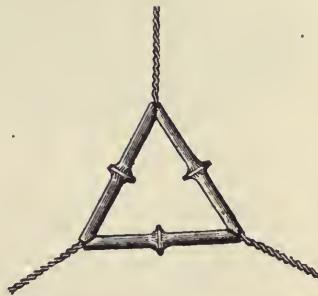
TRIANGLES



1544



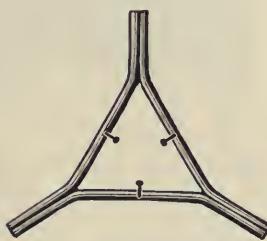
1545



1546

No.

1544	Triangles, plain iron; small, medium, large.....	Each \$0.05; Doz. \$0.50
1545	Triangles, pipestem covered iron wire; small, medium, and large	Each, \$0.10; Doz. .75
1546	Triangles, pipestem covered iron wire; improved form; small, medium and large	Each \$0.10; Doz. 1.00



1547a

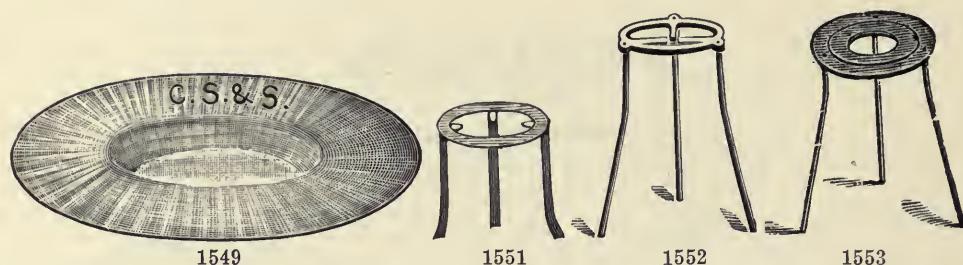


1548

1547 Triangles; pure nickel, plain.

Sides	5	6	7 ctm.
Each	\$0.20	.25	.30

1547a	Triangles; according to Heraeus, of nickel with 3 platinum points.....	\$3.00
	Triangles; platinum, see Platinum Triangles, No. 1271.	
1548	Triangle Holders; Sargent's adjustable; holding triangles firm and in place	1.00



No.

1549	Trays, of paper, S. & S., for drying small quantities of crystals from the water of crystallization. Per box of 25 trays.....	\$3.25
1550	Trays, for annealing cups; of fire clay, for handling annealed cups in muf-fles. Also extensively used for silica fusions. See Fig. 135.....Each	.75
1550a	Trays, for cupels, holding 16 cupels, with detachable handle, all iron. See Fig. 749.....	.75
1551	Tripods, brass, dissectible, for alcohol lamps .....	.60
1552	Tripods, iron, Bunsen's, for burners .....	.30
1552a	Tripods, iron, small, for alcohol lamps 6" high.....	.20
1553	Tripods, iron; with concentric rings.	

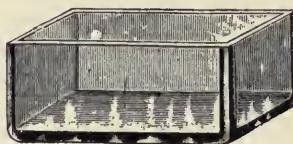
With	2	3	4	5 rings.
Each	\$0.30	.40	.60	.90



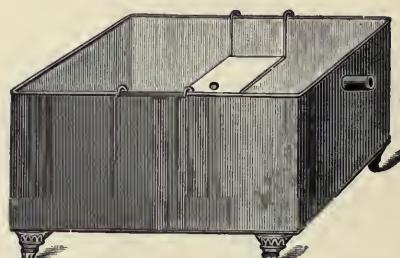
1554



1555



1556



1557

1554	Troughs, mercury; porcelain, cross form, capacity 6 lbs. mercury.....	\$0.90
1555	Troughs, mercury, porcelain, oblong.	

Capacity	8	16 lbs.
Each	\$1.00	1.50

1556	Troughs, glass, with ground off rims.

Length	8	10	12 in.
Width	4	6	8 in.
Height	4	5	6 in.
Each	\$1.50	2.00	3.00

1557	Troughs, pneumatic, japanned zinc, with sliding shelf and overflow.

Size	4x7x10	5x9x12	6x11x15	8x12x18 in.
Each	\$1.25	1.50	1.75	2.00

TUBES



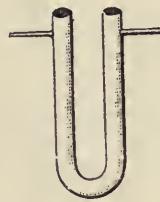
1561



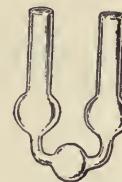
1562



1563



1564



1565



1566

No.

1561 Tubes, calcium chloride, with one bulb.

Length 3 4 5 6 8 in.

Each \$0.08 .09 .10 .12 .15

1562 Tubes, calcium chloride, with two bulbs.

Length 5 6 7 8 10 in.

Each \$0.12 .15 .18 .20 .25

1563 Tubes, calcium chloride, U shaped, plain.

Length 3 4 5 6 8 10 in.

Each \$0.12 .14 .16 .20 .30 .40

1564 Tubes, calcium chloride, U shaped, with side tubes.

Length 4 5 6 8 in.

Each \$0.15 .20 .25 .35

1565 Tubes, calcium chloride, Woehler's, with three bulbs.

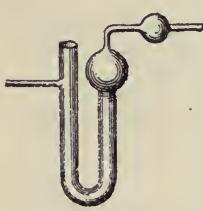
Length 4 5 6 in.

Each \$0.30 .40 .50

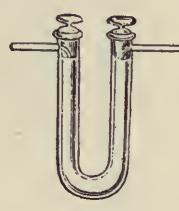
1566 Tubes, calcium chloride, Volhard's.

Length 5 6 in.

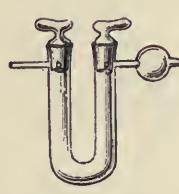
Each \$0.30 .35



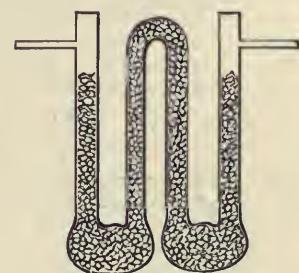
1567



1568



1569



1570

1567 Tubes, calcium chloride, Marchand's.

Length 4 5 6 in.

Each \$0.30 .35 .40

1568 Tubes, calcium chloride, Bischof's, with perforated stopper.

Length 4 5 6 in.

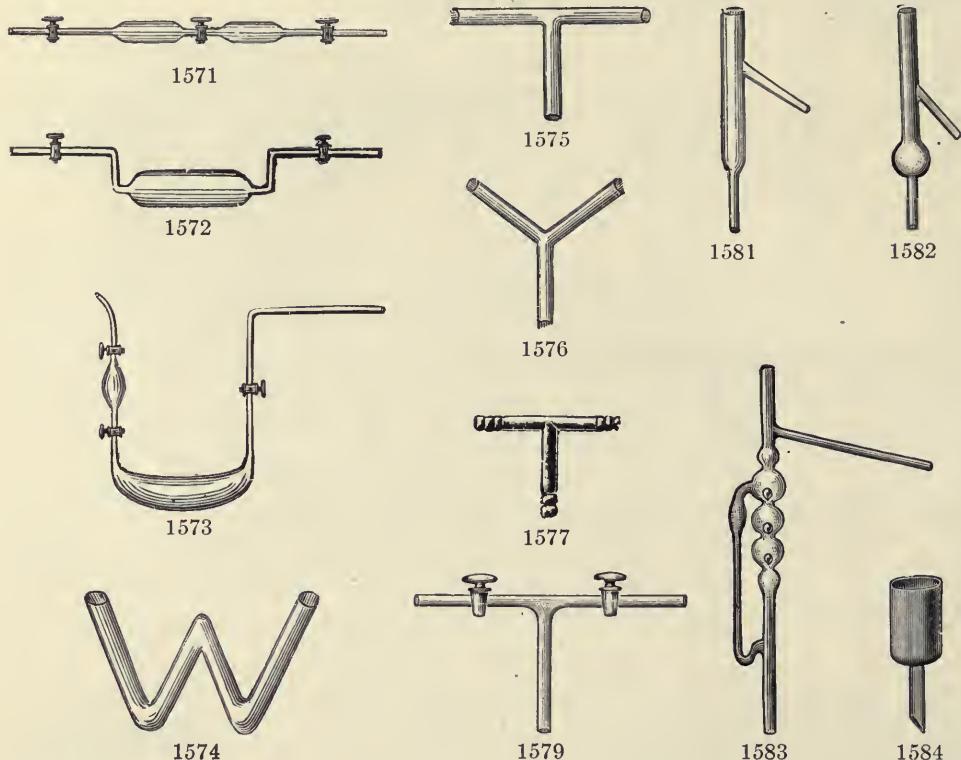
Each \$1.00 1.15 1.25

1569 Tubes, calcium chloride, Braun's, with side bulb and perforated stopper.

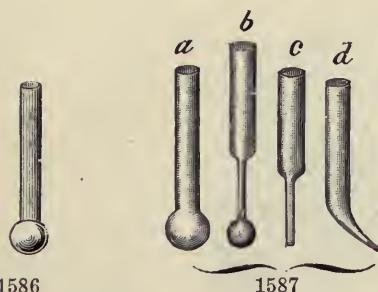
Length 4 5 6 in.

Each \$1.10 1.20 1.40

1570 Tubes, calcium chloride, Thoerner's..... \$2.00



No.								
1571	Tubes, condensing, Liebig's, for sulphurous acid.....							\$3.00
1572	Tubes, condensing, Schumann's, for sulphurous acid.....							.50
1573	Tubes, condensing, Fischer's, for sulphurous acid.....							3.50
1574	Tubes, condensing, W shape, 6 in. high.....							.50
1575	Tubes, connecting, T shape glass.							
	Bore	1/8	3-16	1/4	5/8	1/2	3/4	1 in.
	Each	\$0.08	.10	.12	.15	.18	.25	.40
1576	Tubes, connecting, Y shaped, glass, same prices as No. 1575.							
1577	Tubes, connecting, T shape, brass.							
	Bore	3-16	1/4	5/8	1/2 in.			
	Each	\$0.30	.35	.40	.50			
1578	Tubes, connecting, Y shape, brass, same prices as No. 1577.							
1579	Tubes, connecting, T shape, glass, with two Geissler's stopcocks.....							2.25
1581	Tubes, distilling, for fractional distillation, plain.....							.25
1582	Tubes, distilling, with one bulb.....							.30
1583	Tubes, distilling, Glinsky's, with glass valves, 12 in.							1.50
1584	Tubes, filtering, Gooch's, of glass, for Gooch crucibles, or "Carbon Filters."							
	Dia.	20	25	28	31	34	38 mm.	
	Each	\$0.15	.20	.25	.30	.35	.40	
1584a	Tubes, ignition, heavy test tube form, lead free glass.							
	Length	4	5	6	8 in.			
	Doz.	\$0.60	.80	1.00	1.50			



1586

No.

1585

Tubes, ignition, hard glass, straight.

Length	4	5	6	8 in.
Each	\$0.08	.10	.12	.20

1586 **Tubes, ignition, hard glass, with bulb at end.**

Length	4	5	6	8 in.
Each	\$0.15	.18	.20	.30

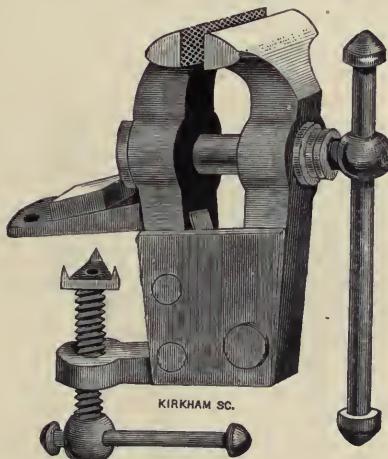
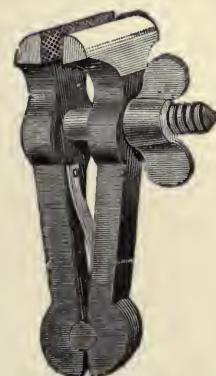
1587 **Tubes, reduction, for arsenic test.** Form a, b, c, d..... Doz. \$0.301588 **Tubes, reduction, hard Bohemian glass.**

With	1	2	3 bulbs.
Each	\$0.20	.25	.30

1588a **Vanning Plaques,** of enameled iron, see Fig. 1035a..... Each 1.001589 **Vises, Hand,** black, with bright jaws, extra quality.

Size	4	5	6 in.
Each	\$0.60	.80	1.00

1589

1590 **Vises, Bench,** with anvil.

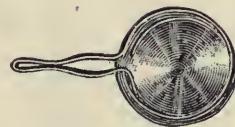
Size	2½	3	3½	4 lbs.
Each	\$1.00	1.25	1.50	1.75

1601 **Watch Glasses,** best quality, well annealed, with ground edges.

Dia.	1¼	1½	2	2½	2¾	3	3½	4	4½	5	6	7	8 in.
Doz.	\$0.20	.25	.25	.40	.50	.60	.80	1.00	1.20	1.50	2.00	3.00	4.00

1602 **Watch Glass Clamps,** nickel-plated, for 2 and 2½ in. sizes..... \$0.201603 **Watch Glass Clamps,** nickel-plated, for 3 and 3½ in. size..... .251604 **Watch Glass Clamps,** Bunson's wire form, nickel-plated 2 in. dia. .20

2½ in. dia. .25



WATER BATHS



1611



1612

No.

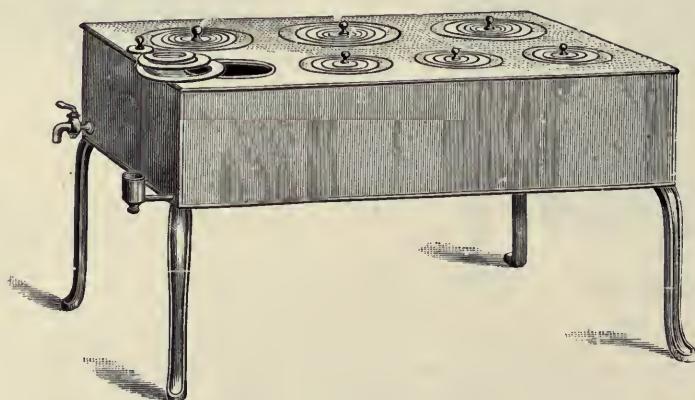
1611 Water Bath, heavy copper, tin lined, with concentric rings and cover, handles and steam escape.

Dia.	4	5	5½	6	8	10	12 in.
Each	\$1.00	1.20	1.40	1.60	2.50	5.00	9.00

1611a Water Bath, of cast iron, nickel-plated, 6 in. dia., same shape as No. 1611, but without steam escape..... \$1.00

1612 Water Bath, heavy copper, tin lined and with Kekule's constant water level.

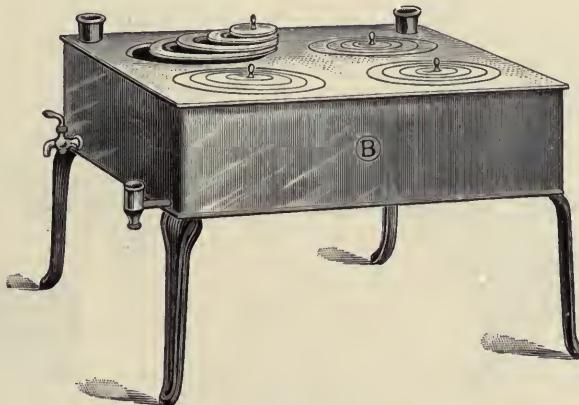
Dia.	4	5	5½	6	8	10 in.
Each	\$1.50	1.75	2.00	2.25	3.00	5.50



1613

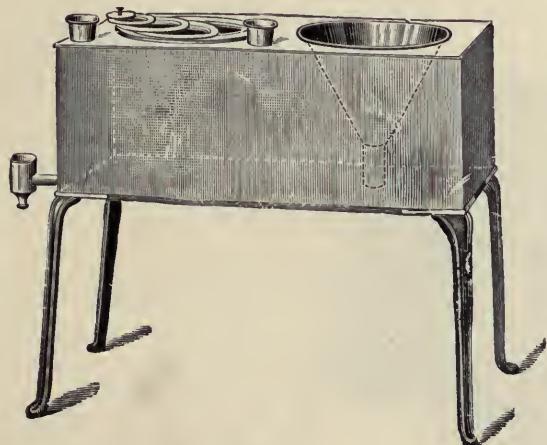
1613 Water Bath, heavy copper, with three 6-in. and four 4-in. openings, all provided with concentric rings and cover in center; with stopcock and constant water regulator. Size 23 x 14 x 5 in. \$20.00

1613a Water Bath, same as No. 1613, but fitted with a coil, to be heated by steam. 25.00

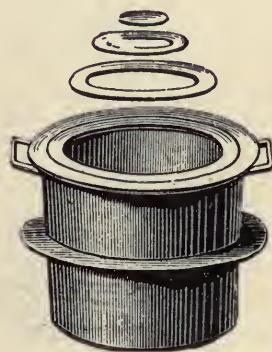


1614

No.
 1614 Water Bath, of copper, same as No. 1613, but with only four 5-in. holes; size 14 x 14 in. \$14.00
 1614a Water Bath, same as No. 1614, but fitted with a coil, to be heated by steam. 18.00
 1615 Water Bath, of copper, for hot filtration and evaporation; size 13 x 7 x 5 in. 12.00



1615



1617

1616 Water Bath, of copper, cylindrical, with round tray for 12 test tubes..... \$4.00
 1617 Water Baths, cylindrical, of iron, porcelain-lined inside, with set of copper rings and cover.

Dia.	5	6	8 in.
Each	\$1.50	2.00	3.00



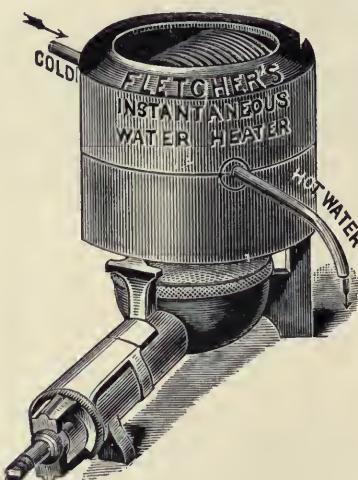
1618



1619

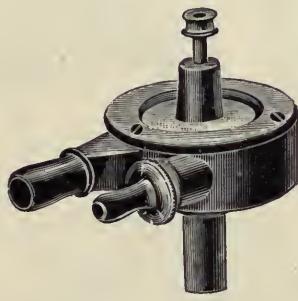
No.

1618	Water Heaters, Electrical, of seamless copper, nickel-plated, and double tin-lined.	
	(a) Pint size, one heat, with 6 feet of cord	\$5.50
	(b) Quart size, one heat, with 6 feet of cord.....	7.00
1619	Water Heaters, Electrical, coil form, for immersion in water, etc.	
	One heat, 100 watts to 2500 watts	\$6.50 to 18.00
	Three heats, 110 watts to 2500 watts	8.00 to 22.00
	The three-heat coils are recommended where the water is to be kept hot for any length of time.	

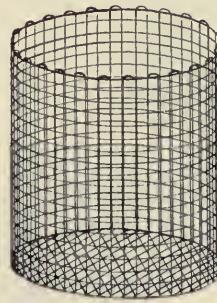


1620

1620	Water Heater, Fletcher's, instantaneous	\$4.00
	Complete with burner	6.00



1621



1625a

No.

1621 **Water Motor, Rabes'**, small size to operate stirring or shaking apparatus in laboratories. Complete with holder \$5.00

1621a **Wire, copper.**

B. & S. Gauge No.	12	14	16	18	20	22	24
Per lb. spool	\$0.40	.42	.45	.48	.50	.55	.60
B. & S. Gauge No.	26	27	28	30	32	34	36
Per lb. spool	\$0.65	.70	.75	.80	.1.00	1.20	2.00

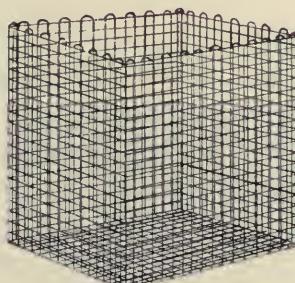
1621b **Wire, copper**, cotton covered No. 18, s. c. office or annunciator wire...lb. .50

1622 **Wire, iron**, pure for standardizing.....Per oz. bottle \$0.15; 10 bottles 1.30

1623 **Wire, German Silver**, on $\frac{1}{4}$ lb. spools.

No.	16	18	20	22	24	26	28	30 B. & S.
Spool	\$0.30	.30	.35	.40	.45	.50	.55	.60

Wire, platinum, see Platinum Wire, No. 1273.



1625b

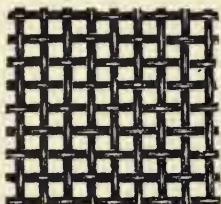
1625 **Wire Baskets**, for bacteriological work.

(a) Round 5 x 5 7 x 7 9 x 9 in.

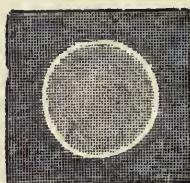
Each	\$0.50	.60	.75
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(b) Square 5 x 5 x 5 7 x 7 x 7 9 x 9 x 9 in.

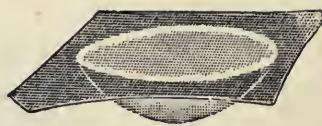
Each	\$0.50	.60	.80
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1634



1636



1637

No.

1631 Wire Gauze, brass.

Mesh	10	20	30	40	50	60	70
Sq. ft.	\$0.50	.50	.52	.55	.58	.60	.70
Mesh	80	90	100	120	150	200	
Sq. ft.	\$0.90	1.10	1.30	1.70	3.00	6.00	

1632 Wire Gauze, copper, for combustions, etc.

Size	20	40	60	80	100 meshes.
Sq. ft.	\$0.60	.70	.80	1.20	1.50

1633 Wire Gauze, iron.

Size	6	10	14	16	20	40	60	80	meshes.
Sq. ft.	\$0.20	.25	.28	.30	.35	.45	.70	1.00	

1634 Wire Gauze, iron, correct thickness for heating beakers, dishes, etc.

Size	4	5	6	8 in. sq.
Each	\$0.06	.08	.10	.20

1635 Wire Gauze, brass, correct thickness for heating beakers, dishes, etc.

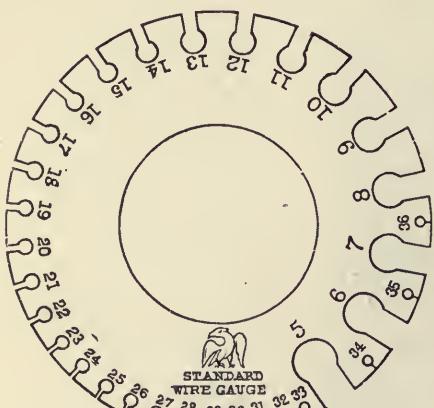
Size	4	5	6	8 in. sq.
Each	\$0.10	.15	.20	.40

1636 Wire Gauze, tinned iron, with flat asbestos center.

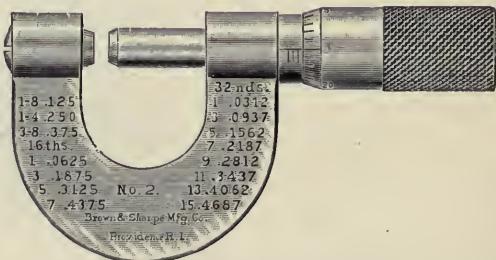
Size	4	5	6 in. sq.
Each	\$0.12	.15	.20

1637 Wire Gauze, tinned iron, with hemispherical asbestos center.

Size	4	5	6	8 in. sq.
Each	\$0.30	.40	.50	.60



1641



The Johnson "Rapid" Zinc Shaving Lathe

PATENTED.



1650

Code Word, "Joh."

No.

1650 Zinc Shaving Lathe:

The development of this new and successful machine has been based on the experience of many months spent in the production of zinc shavings for the market.

The experience gained in this work, together with some of the problems connected with the rapid and economical production of the highest grade of zinc shavings for cyanide work has resulted in the production of a machine that most fully answers all requirements and is now in use in some of the largest mills in the country.

The lathe, as shown in the engraving, is of the type in which the shavings are cut from commercial sheet zinc, taking sheets 36 inches in width, which are wound on an arbor under pressure, the shavings being cut by a side tool fed automatically.

This process is not new, and is sometimes used by adapting an ordinary engine lathe to the service, but at best this is makeshift, as compared with a properly designed machine made for this purpose especially. For instance, the tool post arrangements

are not suitable for attaching the pressure winding device; also the heat generated by the cutting expands the arbor, and if not attended to is likely to destroy the center. Again, there being no provision in the construction of the ordinary lathe for a clear fall for the shavings from the arbor, they are apt to become tangled or wound again, thus causing frequent stoppage.

In the design of the Johnson Zinc Lathe the following are some of the more important points that have been provided for:

THE BED CASTING.

The bed casting is of complete box form (the strongest possible shape), the front edge being formed as a bearing to support the carriage, the rear portion slanting backward to allow the shavings a free discharge to the floor or bin. The three bearing boxes for the spindle are cast integral with the bed, which gives the rigidity that is required.

THE SPINDLE.

The spindle is of the highest grade mild steel, of ample size, and accurately turned and ground.

THE ARBOR OR DRUM.

The arbor is of extra heavy 6-inch pipe, fitted to the spindle by means of heavy flanges. The tail end of spindle being hollow serves as a passage for a stream of cooling water. The greatest care is taken in the fitting of this arbor that it should be true, solid and water-tight.

THE TOOL HOLDER.

The tool holder is of special design that not only holds the cutting tool very rigidly, but provides as well for securing the Automatic Pressure Winding Device.

THE PRESSURE WINDING DEVICE.

This is a simple and effective device that is easily applied, by which the sheets are wound tightly on the arbor, and held until soldered or otherwise secured.

THE FEED GEARING.

The automatic feed is operated by means of a train of gears acting through a worm and wheel on a steel pinion and rack; this gives a travel of from .001-inch per revolution of the spindle, producing shavings of from .002-inch to .004-inch in thickness.

THE WATER COOLING DEVICE.

This important feature is worked out in a very simple and effective manner, the arrangement requiring no stuffing boxes and no parts subject to wear, and having capacity to maintain the arbor in a perfectly cool condition. This prevents the zinc from becoming heated so as to produce a poor quality of shavings.

Among the advantages of this lathe we may note:

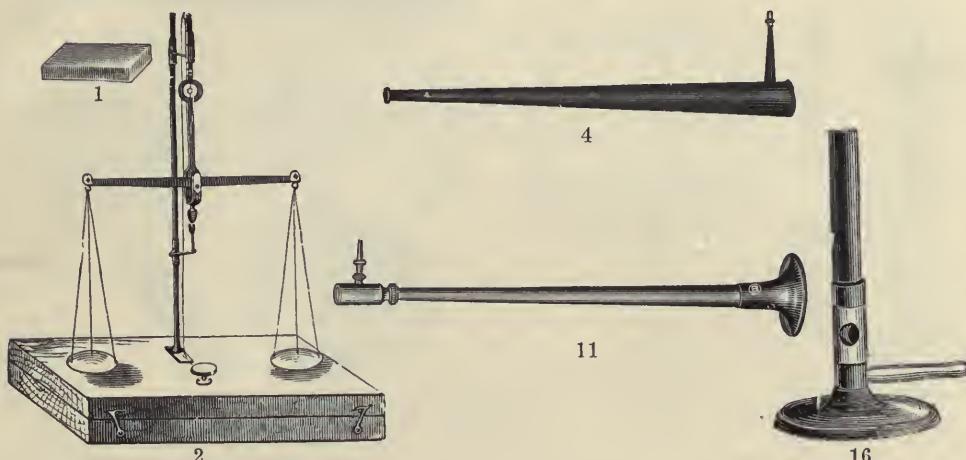
1. The use of plain commercial sheet zinc.
2. The exceedingly small percentage of waste.
3. The uniformity of product which can be maintained indefinitely.
4. The approved quality and strength of shavings produced, owing to the perfect cooling arrangements.

5. And last, but not least, the large capacity, the product per day of nine hours being from eight to nine hundred pounds of shavings cut to thickness of two and a half thousandths of an inch.

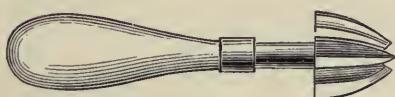
Countershaft furnished has 16x4-inch pulleys and should be speeded to 180 revolutions per minute. Spindle speed, 260 revolutions per minute. Power required, 4 horse-power.

The water cooling and other special features are covered by U. S. patent. Weight 1,700 pounds. Price on application.

BLOW PIPE APPARATUS



No.		
1700	Blow Pipe Apparatus, according to Prof. Plattner, for qualitative and quantitative blow pipe analysis, made after samples taken from the original "Freiberg" set.	
1	Anvil, small, best polished steel.....	\$ 0.50
2	Balance, Plattner's, in polished case, with set of weights.....	22.00
3	Beakers, lipped, .000 to 0.....	.25
4	Blow Pipe, Black's conical form with brass tip.....	.25
5	Blow Pipe, jewelers' form, plain.....	.15
6	Blow Pipe, brass, jewelers' form, with bulb.....	.25
7	Blow Pipe, Berzelius', of brass, with platinum plate.....	1.50
9	Blow Pipe, Plattner's, nickel-plated, with movable platinum tip and hard rubber mouth-piece.....	3.00
11	Blow Pipe Lamp, Plattner's, nickel-plated.....	3.00
12	Blow Pipe Lamp, Plattner's nickel-plated, with patent swivel.....	4.00
13	Blow Pipe Lamp, Fletcher's, polished brass.....	.75
14	Blow Pipe Lamp, Fletcher's, brass, nickel-plated.....	1.00
15	Blow Pipe Lamp, tin, for tallow.....	.30
16	Burners, Bunsen's, with tip and tube for blow-piping.....	.85
17	Button Brush.....	.50
18	Capsules, of porcelain.....	.20
19	Carbon Blocks, moulded, 4 in. diameter.....	.30
20	Carbon Cylinders, moulded, 3 x 1½ in.....	.20

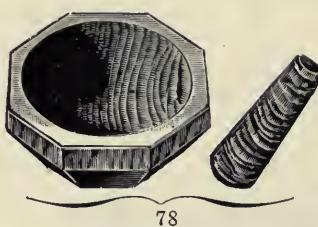


21



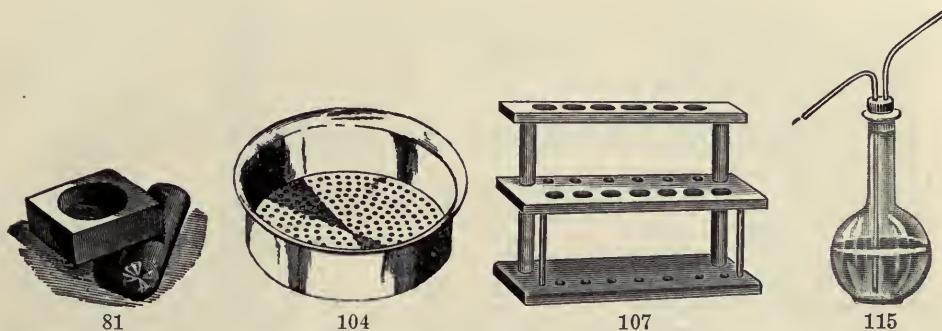
22

21	Charcoal Borer, club shape, large	\$0.75
22	Charcoal Borer, four-cornered, small.....	.50
23	Charcoal Borer, with spatula.....	.50
24	Charcoal Capsules .....	.Doz. .20
25	Charcoal Crucibles .....	.Doz. .20
26	Charcoal Holder, with platinum wire and shield	2.25
27	Charcoal Saw.....	.35



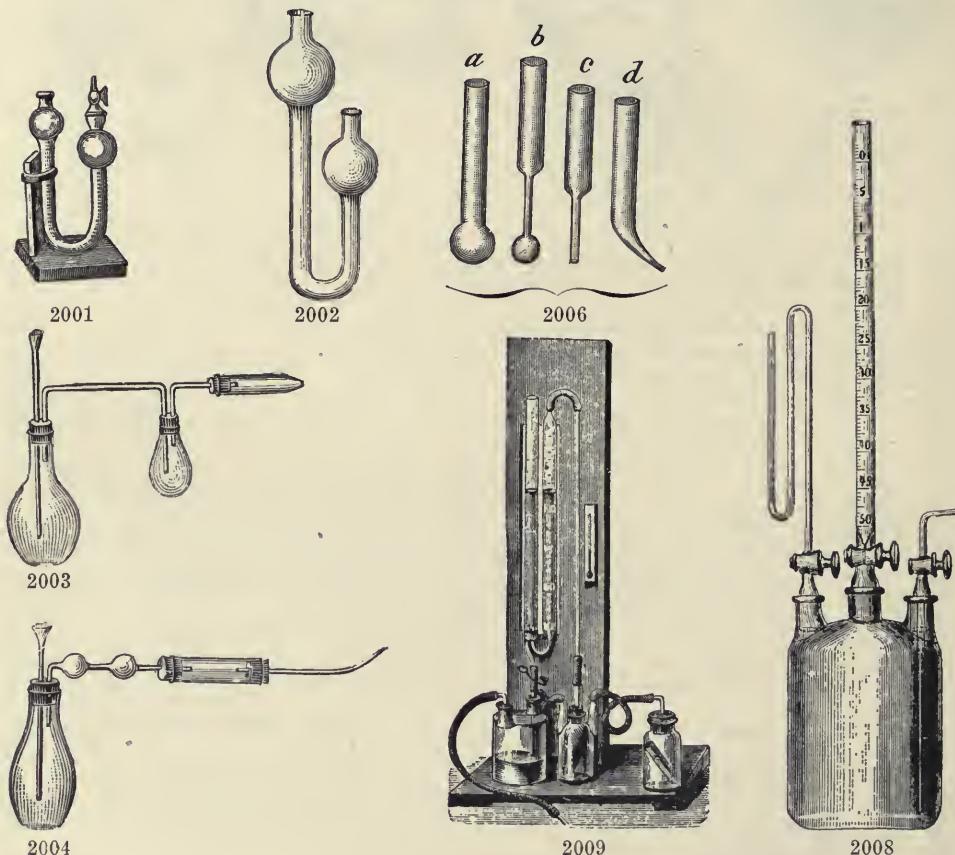
No.

28	Charcoal squares.....	Doz.	\$1.00
29	Charcoal Square Covers.....	"	.40
30	Charcoals, natural.....	"	.50
31	Charcoals, artificial.....	"	.50
32	Clay Capsules.....	"	.20
33	Clay Crucibles	"	.20
34	Clay Cylinder .....		.25
35	Cold Chisels .....		.25
36	Cupel Holder, with two moulds and one stamp.....		1.50
37	Dishes, of porcelain, three in set.....	Set	.25
38	Dropping Bottle .....		.35
39	Dropping Tube .....		.05
40	Files, round and triangular, with handles.....		.30
41	Forcesps, see page 164.		
48	Forms of boxwood, for paper cylinders.....		.15
49	Funnel, of glass, small set of three.....		.20
51	Funnel, of tin, japanned.....		.25
53	Hammers, Plattner's, polished wire handle.....		.60
54	Hardness Scales.....		2.00
55	Holder, for chimney and funnel.....		1.50
56	Holder for evaporating dish, with triangle.....		2.00
57	Holder, for platinum wire.....		.50
58	Holder, same as 57, with six wires.....		1.25
59	Ivory Spoon.....		.20
60	Knife .....		.25
61	Lamp, for alcohol, glass .....		.50
62	Lamp, for alcohol, brass .....		.50
63	Magnet, Horseshoe .....		.25
64	Magnet, straight, with chisel edge.....		.35
65	Magnifiers, see page 218.		
70	Matrasses, with bulb.....	Doz.	.30
72	Matrass Holder .....		.30
73	Mixing Capsule, brass.....		.20
74	Mixing Capsule, brass, nickel-plated.....		.30
75	Mixing Capsule, German silver.....		.35
76	Mixing Capsule, horn.....		.15
77	Mixing Spatula, steel .....		.25
78	Mortar, agate, with pestle.....		1.75



No.			
79	Mortars, steel, Plattner's Diamond, small.....	\$3.60	
80	Mortars, steel, Plattner's Diamond, large.....	5.50	
81	Mortars, steel, Leed's form.....	2.00	
82	Moulds, for charcoal square and covers	4.50	
83	Moulds, for charcoal capsules .....	.75	
84	Moulds, for charcoal crucibles.....	.50	
85	Moulds, of brass, for clay crucibles.....	4.00	
86	Moulds, of boxwood, for clay crucibles.....	1.25	
87	Moulds, of boxwood, for clay capsules.....	.75	
88	Nippers, flat-nose pliers .....	.50	
89	Platinum Foil	Market Price	
90	Platinum Wire	"	
91	Platinum Crucible.....	"	
92	Platinum Spoon.....	"	
93	Platinum Tip, for blow pipe.....	"	
94	Pliers, for assay buttons, straight and bent.....	.50	
95	Scale, Plattner's, of ivory, for silver beads.....	3.00	
97	Scissors, for lamp.....	.50	
98	Shears, for cutting metal.....	1.00	
99	Silver Foil, chem. pure.....	Oz. 1.25	
100	Soda Papers.....	Box .20	
101	Stirrers, of glass.....	Doz. .25	
102	Streak Plate .....	.20	
103	Test Lead Measure .....	.25	
104	Test Lead Sieve .....	.50	
105	Test Tubes.....	Doz. .25	
106	Test Tube Holder.....	.15	
107	Test Tube Support.....	.45	
108	Tin Box, japanned, for charcoal squares.....	.75	
109	Tin Box, japanned, for capsules and crucibles.....	.75	
111	Tin Trays, japanned, for charcoal.....	.45	
112	Tin Trays, japanned, for dirt.....	.35	
113	Tubes, open at both ends, hard glass.....	Doz. .30	
114	Tubes for arsenic reduction.....	.10	
115	Wash Bottle .....	.75	
116	Watch Glass, 2-inch.....	Doz. .35	
117	Watch Glass Clip.....	.25	
118	Wicks, for Lamp.....	Bundle .10	
119	Frame, for 18 reagents.....	.60	
120	Frame, with 18 cork-stoppered bottles, labeled.....	1.50	
121	Frame, with 18 glass-stoppered bottles, labeled	2.00	
122	Filling 18 bottles with reagents.....	2.00	

PART II

Special Chemical Apparatus for
Analytical Work

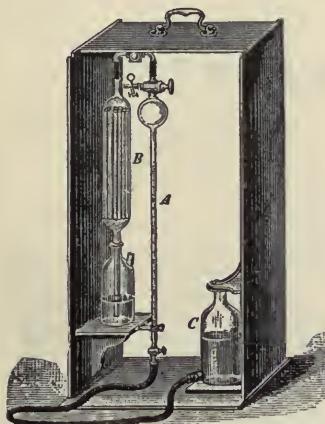
No.

A. ARSENIC DETERMINATION.

2001	Marsh's Apparatus, with stopcock, on polished wooden support.....	\$ 2.20
2002	Plain Marsh U Tube.....	.40
2003	Fresenius' Arsenic Apparatus.....	1.00
2004	Berzelius' Arsenic Apparatus.....	1.00
2005	Porcelain Test Plates, for arsenic apparatus.....	.20
2006	Reduction Tubes, form <i>a</i> , <i>b</i> , <i>c</i> , <i>d</i>	Each, \$0.05; Doz. .30

B. CARBONIC ACID DETERMINATION.

2007	Peterson & Palmquist's Apparatus for CO ₂ in air.....	50.00
2008	Ruedorff's Apparatus for CO ₂ in illuminating gas.....	10.00
2009	Scheibler's Calcimeter, for CO ₂ in bone black.....	25.00
2010	Scheibler's, for CO ₂ in saturation gases.....	30.00



2010a



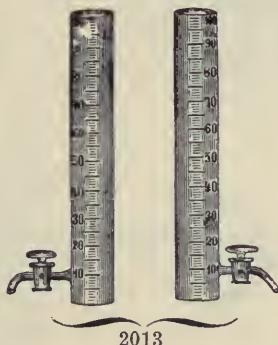
2011

B. CARBONIC ACID DETERMINATION.

No.			
2010a	Winkler's, for CO ₂ in atmospheric air and mines.....	\$20.00	

C. COLORIMETRIC DETERMINATION.

2011	Leed's Color Comparator. For quantitative analysis of substances in solutions, with prism.....	15.00
2012	Color Glasses. For Leed's Comparator.....Doz.	2.50

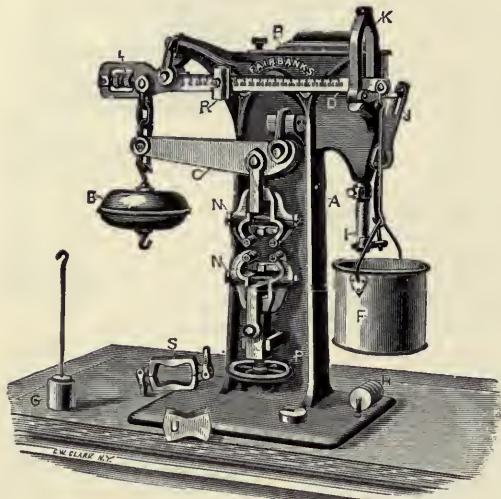


2013

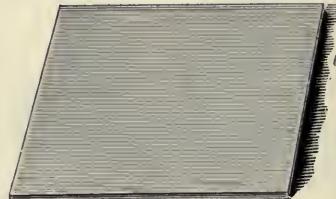
2013	Hehner's Colorimeter. For estimating ammonia in water; consisting of 2 graduated cylinders, with stopcocks.....	\$4.00
2014	Gallenkamp-Heele's Colorimeter. With direct scale of percentage; easily and quickly adjusted and permitting very accurate readings, adapted for sugar factories, dyeing establishments, etc.....	85.00
2015	Stammer's Colorimeter. For testing color in sugar analysis; latest form..	60.00
2016	Wolff's Colorimeter. On iron base. This valuable instrument serves to determine aniline dyes, indigo, cochineal, dye woods, bone black, salicylic acid in absorbent cotton, smallest traces of copper, zinc, lead and chlorine, ammonia and nitrous acid in water, also for making colored indicators, etc.....	80.00
2017	Duboscq-Soleil's Colorimeter.....	80.00
2018	Lovibond's Tintometer, with a complete set of 470 standard glasses.....	300.00
2019	Stoke's Color Comparator, complete.....	15.00

CEMENT TESTING APPARATUS

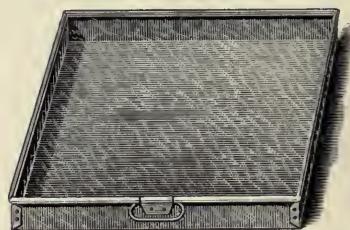
(Physical)



2020



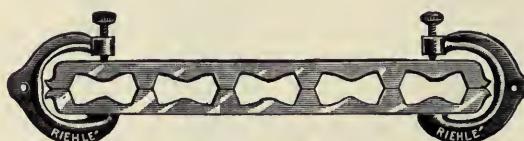
2020c



2020d

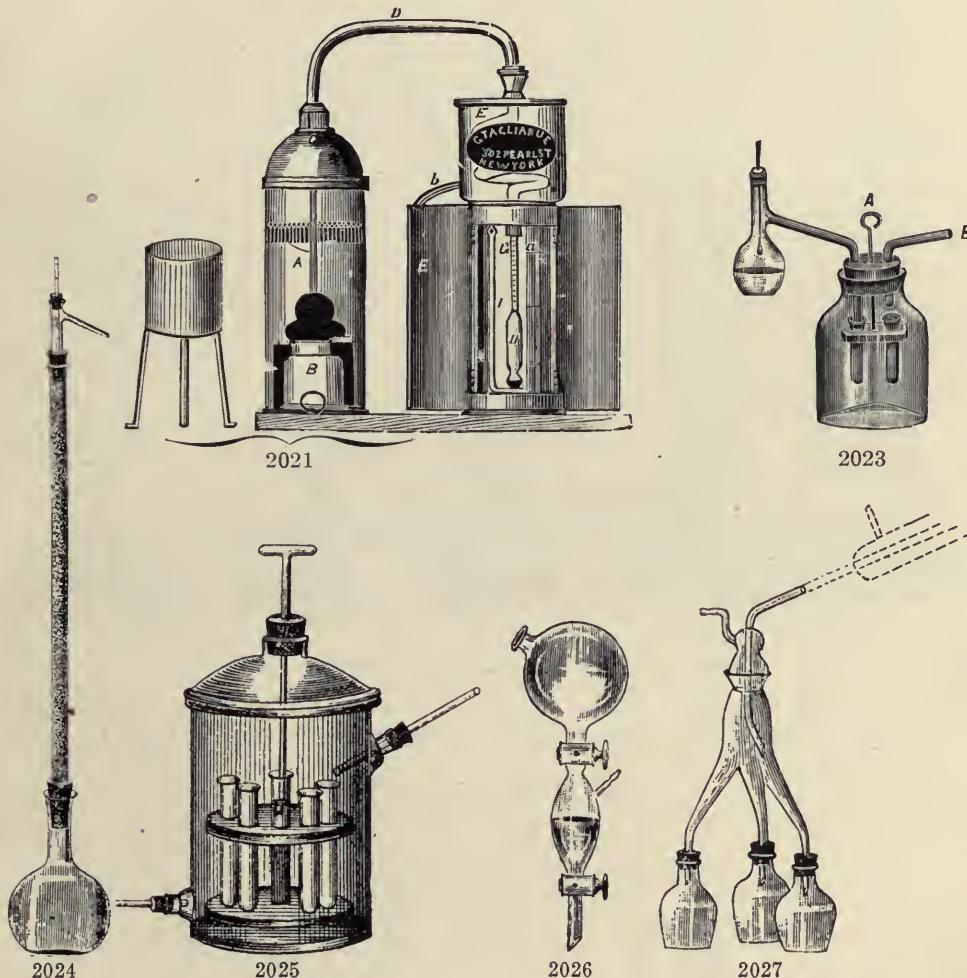


2020a



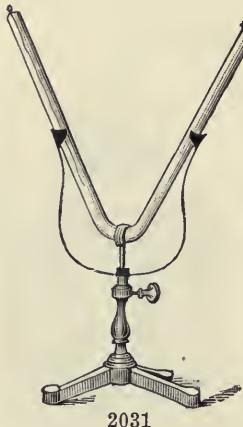
2020b

No.			
2020	Cement Testing Machine, Automatic, Fairbank's.	This machine is recognized as the standard. Capacity, 1,000 pounds; size, 12 x 24 inches. Price, with one Standard Briquette mould.....	\$110.00
2020a	Briquette Moulds, of brass, forming the Standard Briquette of the American Society of Civil Engineers.....	Each	4.00
2020b	Briquette Mould, gang, for four		15.00
2020c	Glass Plate, of heavy glass with smooth edges, size 24 x 24 inches.....		8.00
2020d	Pans, of galvanized iron, with handle, 24 x 24 x 3 inches.....		2.00
2020e	Vicat's Identing Apparatus, to show the time of setting of cement, with scale graduated in millimeters and fractions of the inch.....		30.00
2020f	Gilmore's Needles, consisting of steel needle, 1-12 inch in diameter, loaded with weight of $\frac{1}{4}$ pound; and another needle 1-24 inch in diameter, loaded with weight 1 pound. With block.....		5.00



D. DISTILLING APPARATUS.

No.			
2021	Alembic Salleron, or Monitor Still, for testing wine and spirituous liquids, made of copper, complete in box.....	\$10.00	
2022	Distilling Apparatus, Regnault's, for fractional distillation.....	15.00	
2023	Distilling Apparatus, for fractional distillation under diminished pressure..	3.00	
2024	Distilling Apparatus, Hempel's, for fractional distillation, filled with beads..	2.00	
2025	Distilling Apparatus, Bruhl's, for distillation in vacuo, with 5 cylinders of 40 cc. capacity.....	10.00	
2026	Distilling Apparatus, Fuch's Receiver, for distillation in vacuo.....	3.50	
2027	Distilling Apparatus, Gautier's Receiver, for distillation in vacuo.....	4.00	



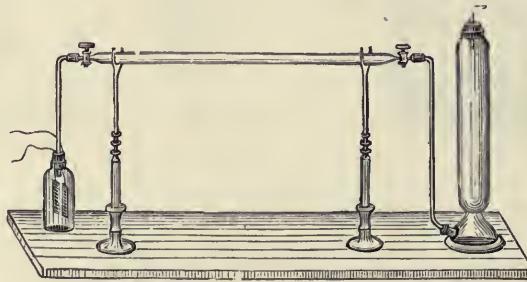
2031

E. ELECTROLYTIC APPARATUS.**a. PROF. A. W. HOFMANN'S LECTURE APPARATUS.**

No.

2031 Apparatus for the electrolytical decomposition of Hydrochloric Acid, Water and Ammonia.

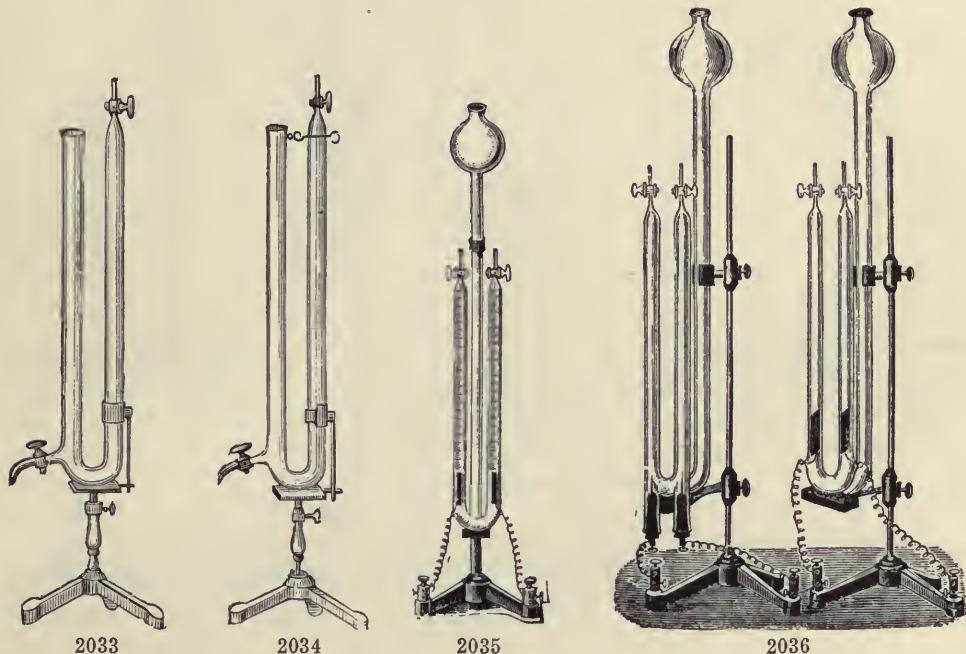
2031a	The V-shaped tube with platinum electrodes	\$3.00
2031b	The support	1.50



2032

2032 Apparatus to demonstrate that Hydrochloric Acid is produced by the combination of 1 vol. of Chlorine with 1 vol. of Hydrogen. The apparatus consists of tube, 2 tube supports, chloride of calcium jar, cylinder with enlarged top, and decomposing cell.

2032a	The tube and cylinder	\$3.50
2032b	The tube supports only	2.50
2032c	The decomposing cell only	4.00



No.

2033 Apparatus to determine the quantity of Hydrogen in 1 vol. of Hydrochloric Acid.

2033a The tube with two glass stopcocks..... \$3.00

2033b The support 2.50

2034 Apparatus to demonstrate that 3 vols. of Hydrogen combine with 1 vol. of Nitrogen in 2 vols. of Ammonia.

2034a The tube with two glass stopcocks..... 4.00

2034b The support 2.50

2035 Apparatus to demonstrate that Water consists of 2 vols. of Hydrogen and 1 vol. of Oxygen.

2035a The graduated tube with platinum electrodes 7.00

2035b The tube, ungraduated, with platinum electrodes 5.50

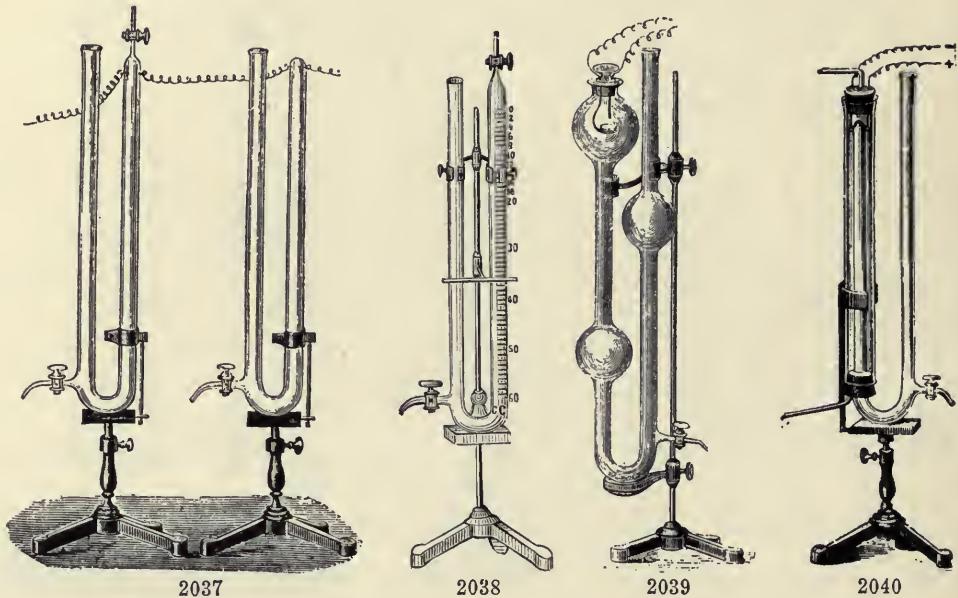
2035c The support with binding screws 3.00

2036 Apparatus for the simultaneous electrolytical decomposition of Water, Hydrochloric Acid and Ammonia.

2036a The graduated tube with platinum electrodes 6.50

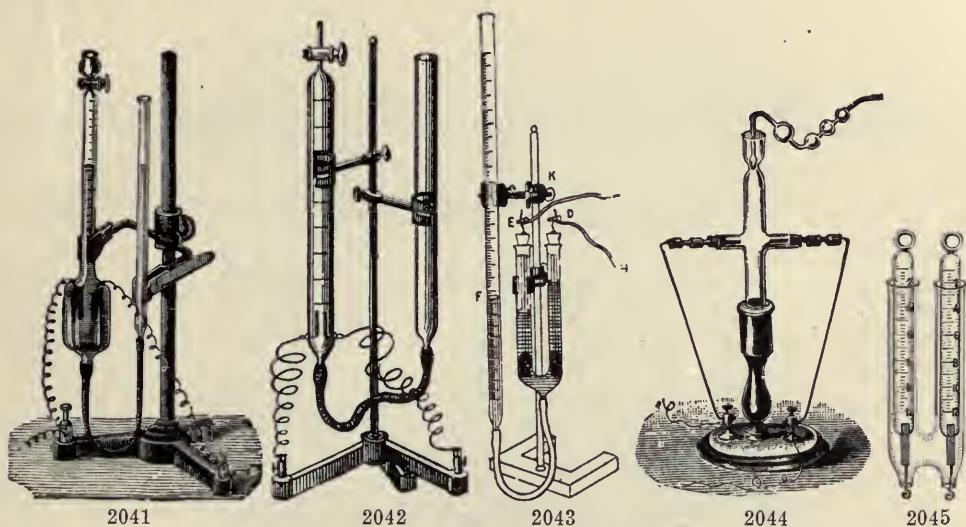
2036b The graduated tubes with carbon electrodes Each 5.00

2036c Supports with binding screws Each 3.00



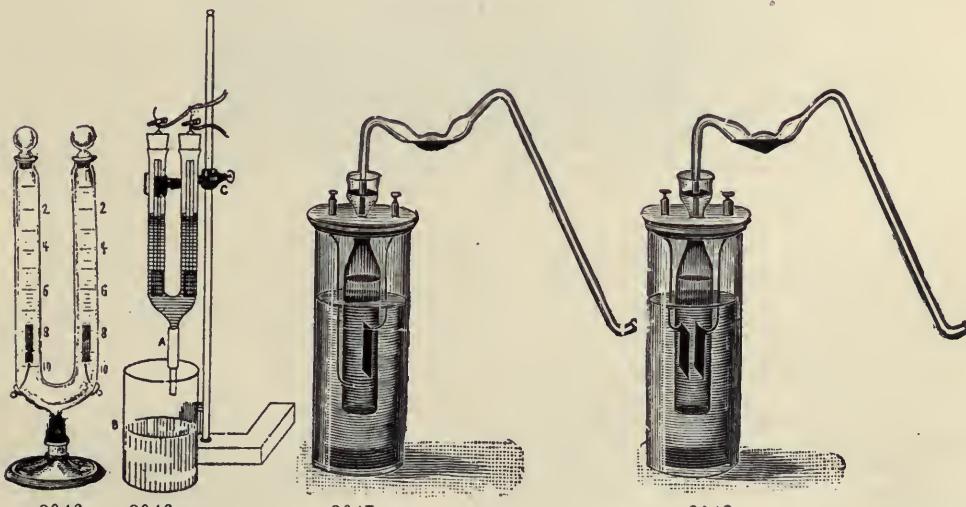
No.

2037	Apparatus to demonstrate that Hydrogen and Oxygen are combined in the same proportions as they are liberated from Water by electrolysis.	
2037a	Tubes with two glass stopcocks.....	Each \$4.00
2037b	The middle tube with glass stopcock	3.00
2037c	The supports	Each 2.50
2038	Apparatus, Lecture Eudiometer.	
2038a	The Eudiometer graduated in cubic centimeters	6.00
2038b	The support	2.50
2039	Apparatus to demonstrate that Oxygen has the same volume as the Carbonic Acid and the Sulphurous Acid formed from it.	
2039a	The tube.....	6.00
2039b	The support.....	2.50
2040	Apparatus to demonstrate that by uniting Hydrogen and Oxygen into Water a condensation of one-third takes place.	
2040a	The tube complete with jacket.....	4.50
2040b	The support.....	3.00



b. GENERAL ELECTROLYTIC APPARATUS.

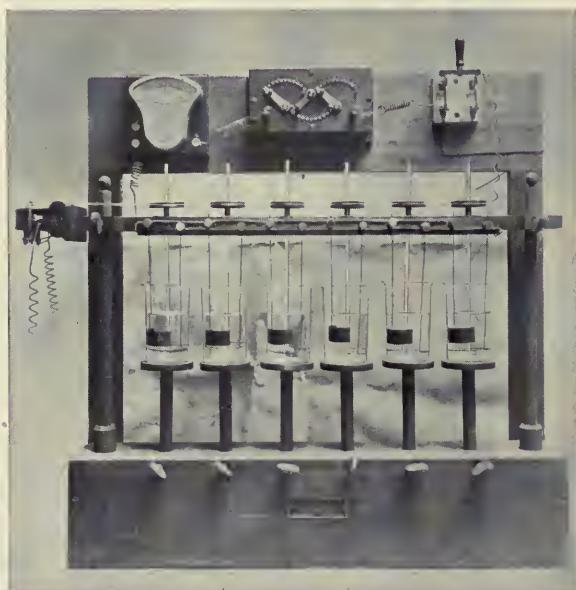
No.			
2041	Classen's Voltameter for quantitative analysis. Complete	\$10.00	
2042	Measuring Voltameter. Tube of 50 cc. divided into $\frac{1}{2}^{\circ}$, with support.....	9.00	
2043	Skidmore's Voltameter. For students, as used in Philadelphia Normal School	4.50	
2044	Roscoe-Schorlemmer's Apparatus with carbon electrodes. For the production of chlorine detonating mixture, with support.....	5.00	
2045	Electrolytic Tube for decomposition of water.....	1.50	



2046	Electrolytic Tube for decomposition of water. U tube, with glass stoppers etc.	\$2.00
2046a	Electrolytic Tube, Skidmore's. For decomposition of water, tube only....	2.50
2047	Electrolytic Apparatus for generation of hydrogen.....	4.00
2048	Electrolytic Apparatus for generation of oxy-hydrogen.....	4.00

The D. F. C. Co. Electrolytic Apparatus

For the Determination of Lead, Copper, Etc.



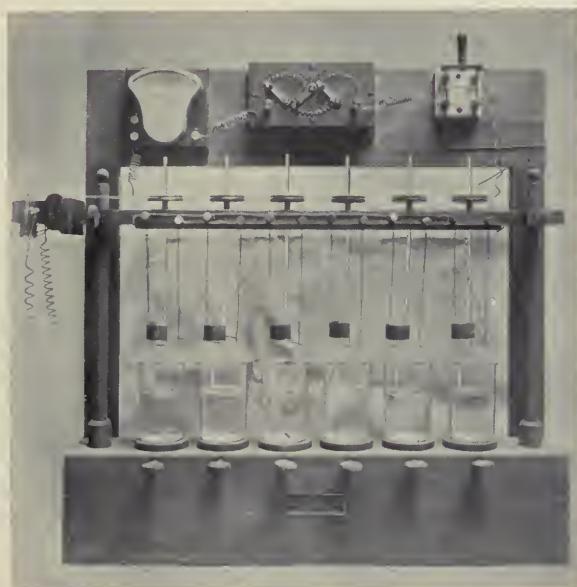
2050

Code Word, "Elec."

No.

2050 Electrolytic Apparatus, D. F. C. Co's.

The time heretofore required to make electrolytic assays, which, in the present day, is unavailable owing to the large amount of work required of chemists daily, has retarded the more general acceptance of this means of metal determination in the commercial laboratory. We illustrate above an apparatus designed on the lines suggested to us by Albert H. Low, B. S., author of Technical Methods of Ore Analysis, which overcomes this objection and brings electrolysis, in the determination of lead, copper and iron in the low grade ore, within the field of commercial usefulness. This increased speed of deposition is accomplished by imparting to the solution a regular movement around the electrodes by means of glass propellers, the forced contact resulting in a much more rapid reduction in the metallic salt density of the electrolyte and



2050

consequently a complete deposition in a shorter period of time. Where heretofore it has required from three to twelve hours, our apparatus accomplishes equal results in from forty minutes to one hour.

The improvements in the design of our apparatus over that of other types can be readily noted from the illustrations. A brief description follows:

The apparatus consists essentially of a hardwood cabinet, in the base of which are adjustable stools, one for each unit, on which the beaker containing the assay stands. The two uprights at the ends carry the cross arm through which the propellers are suspended and which furnishes their bearing; the poles for the electrodes are also fixed to this cross arm. On one end is seen the motor for transmitting power to the propellers, and operated itself with dry batteries. The ammeter, voltmeter and rheostat of the usual type are rigidly fastened to the top piece. The whole is compact, self-contained and substantially made.

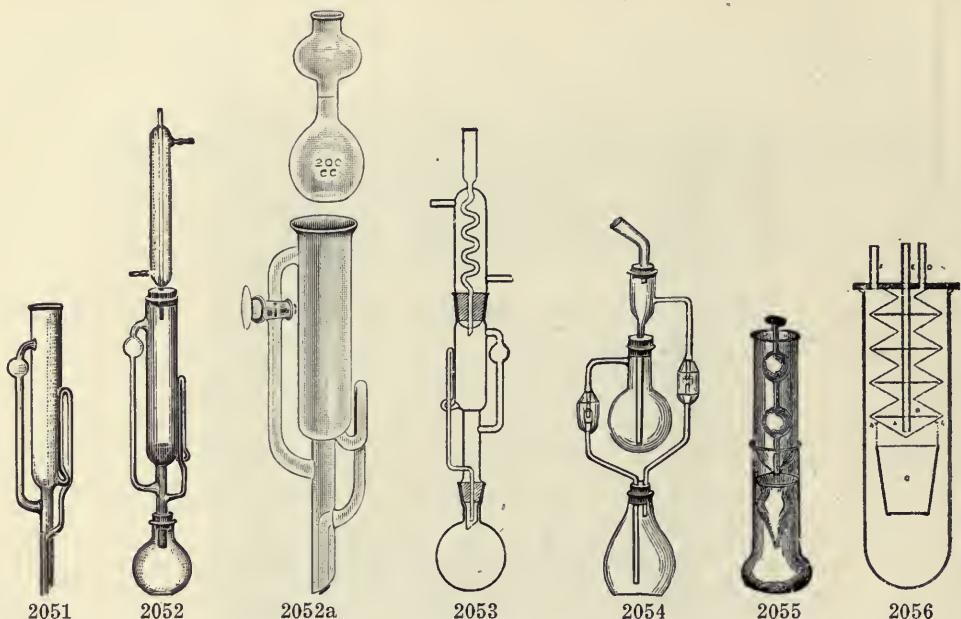
In connection with this apparatus we advise the use of storage batteries to furnish the necessary current, for the reasons that their freedom from obnoxious fumes, the fact that component parts require no renewal and the great constancy of the potential difference which they furnish makes them particularly suited for their work.

METHOD OF OPERATION.

After the dilution of the electrolyte to the proper point the beaker is placed on the stool and the electrodes fixed to their poles; the stool is then adjusted with wooden screw to immerse the electrodes and propeller. The motor is then started and current through rheostat turned in. After complete deposition the cathode is loosened and drops quietly into the beaker; the stool is then lowered by loosening the retaining screw, and after clearing the propeller the beaker is removed from the stool, when the cathode is taken out, washed in water and alcohol, dried and weighed.

Its simplicity, mechanical design and effectiveness should appeal strongly to any one in the market for electrolytic laboratory equipment. Made in 6, 12 and 24 units; larger number of units to order. Prices upon application.

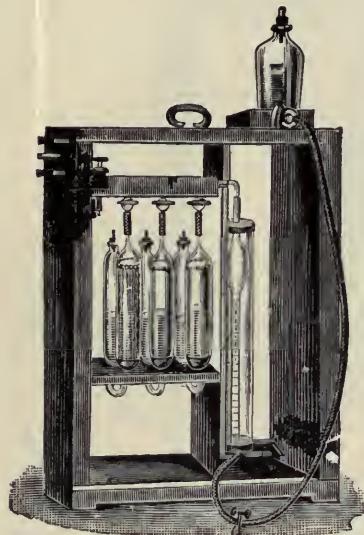
Methods for the electrolytic estimation of lead and copper and other valuable information on the use and care of electrolytic equipment furnished upon request.



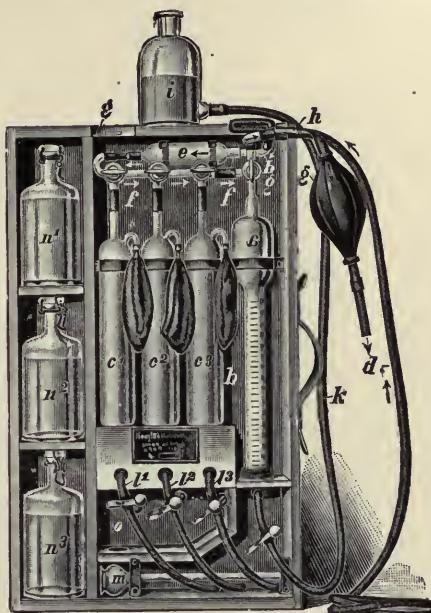
F. EXTRACTION APPARATUS.

No.

2051	Extraction Apparatus, Soxhlet's.	With bulb in side tube.			
	Capacity	2	4	6 oz.	
	Each	\$1.20	1.50	2.00	
2052	Extraction Apparatus, Soxhlet's.	Complete with flask and condenser.			
	Capacity	2	4	6 oz.	
	Each	\$2.25	2.50	3.50	
2052a	Extractor, Soxhlet-Baird's,	with stopcock of large bore, as used in sugar laboratories			\$2.00
	Special flasks for same, each				.50
2053	Extraction Apparatus, Soxhlet-Szombathi's.	All parts fitted by ground joints.			
	Capacity	2	4	6 oz.	
	Each	\$4.00	5.00	6.00	
2054	Extraction Apparatus, Schwarz's.	Joints to be closed by mercury seal.			
	Capacity	4	8 oz.		
	Each	\$2.00	2.75		
2055	Extraction Apparatus, Thorn's.....				\$2.00
2056	Extraction Apparatus, Wiley's.	Very simple and effective, dispensing with corks and other stoppers; permits a double weighing both of residue and extracted matter. Complete with nickel-plated metal condenser and porcelain Gooch crucible, fitted to tube with ground flange, to insure close connection.....			
	Size	60x26	80x22	90x19	80x33
2057	Extraction Shells, seamless, of fat free paper.				94x33 mm.
	Box of 25	\$1.75	1.75	1.75	2.00
					2.50



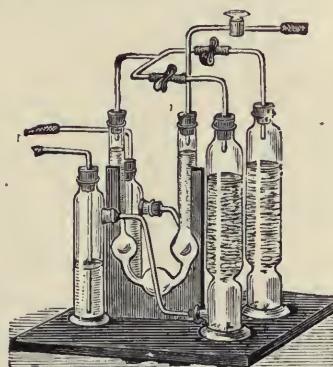
2061



2062a

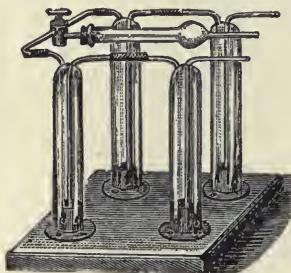
G. GAS ANALYSIS APPARATUS.

No.	Description	Price
2061	Gas Apparatus, Orsat-Muencke's. For analysis of CO ₂ , CO and O, consisting of 3 absorption cylinders, with copper spirals, stopcock, tube with 3-way stopcock, etc., complete in portable wooden case.....	\$25.00
2062	Gas Apparatus, Orsat-Muencke's, modified, with large universal stopcock, dispensing with 4 smaller ones.....	35.00
2062a	Gas Apparatus, according to Constanze Schmitz. This latest and most improved form of gas apparatus has the advantage over all other similar apparatus now in use, that it can be easily and safely carried from one place to another and yet is always ready for instantaneous use, as, once rigged up, it never needs to be taken apart, neither for emptying nor filling the absorption tubes. Price of apparatus with 2 pipettes..... Price of apparatus with 3 pipettes.....	35.00 45.00

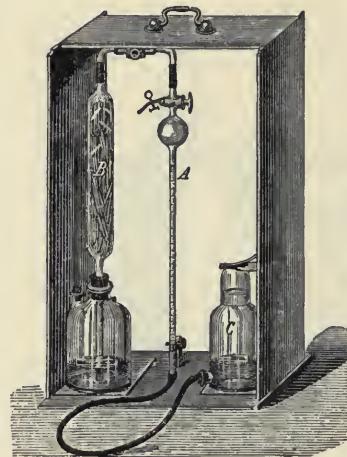


2063

2063	Gas Drying and Washing Apparatus, Glaser's. Consisting of 2 gas washing bottles, 2 CaCl ₂ cylinders, U tube with 3 bulbs, glass tube with stopcock, glass and rubber tubing, pinchcocks and support, complete....	\$9.00
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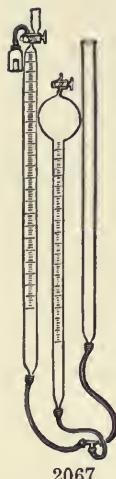


2064

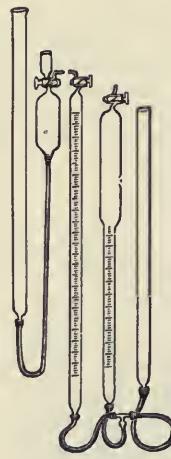


2065

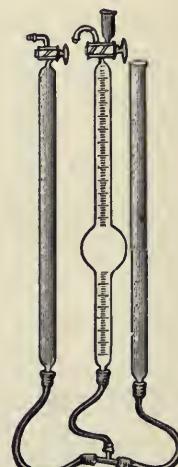
No.			
2064	Gas Drying and Washing Apparatus, Bennert's, complete on wooden support	\$10.00	
2065	Gas Apparatus, Lindemann's, for determining Oxygen in atmospheric air and mines. Complete in case.....	18.00	
2066	Gas Apparatus, Thoerner's, for absorption and direct analysis of gases dissolved in water. On wooden base.....	5.50	



2067

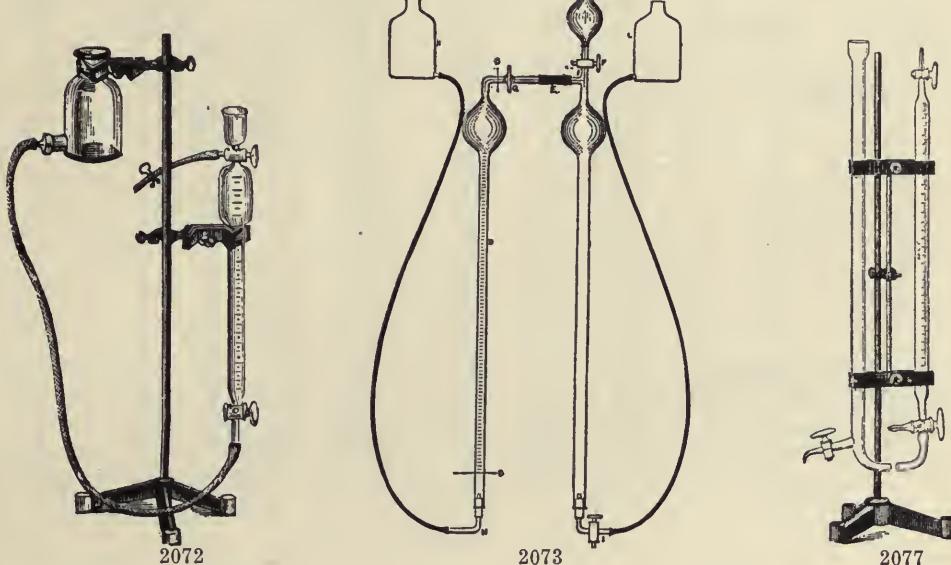


2068



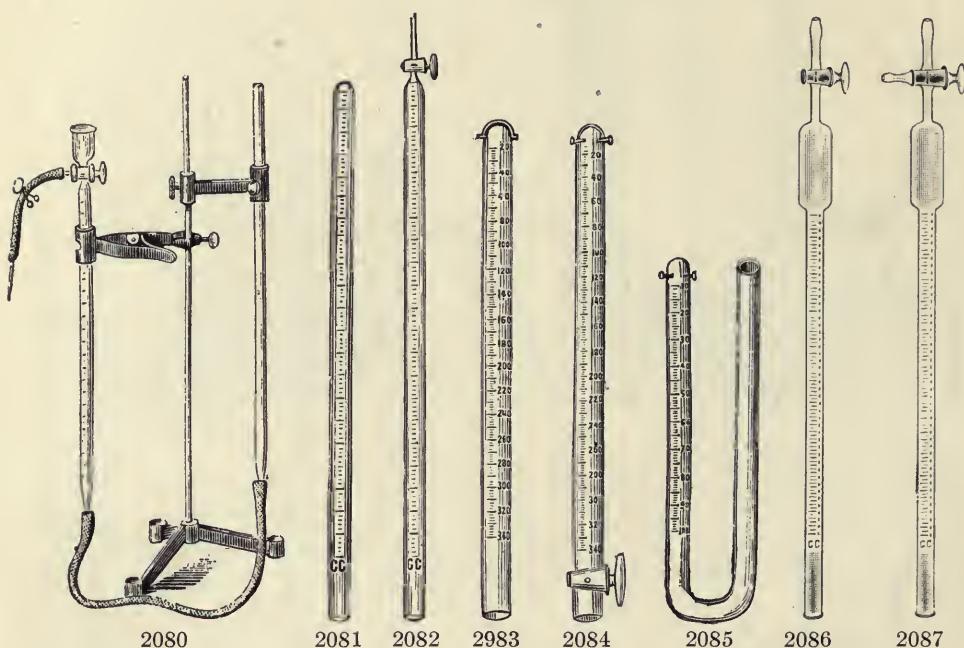
2069

2067	Gas Apparatus, Lunge's Volumeter. For analysis of soluble substances, like manganese, chloride of lime, animal charcoal, calcium carbonate, urea, etc. Complete with heavy rubber tubing.....	\$15.00
2068	Gas Apparatus, Lunge's Volumeter. For analysis of saltpetre, nitrose, nitrocellulose and dynamite, complete.....	20.00
2069	Gas Apparatus, Lunge's Universal Volumeter. Complete with heavy rubber tubing.....	15.00
2070	Gas Apparatus, Thoerner's. For quick control of the working of gas generators	15.00

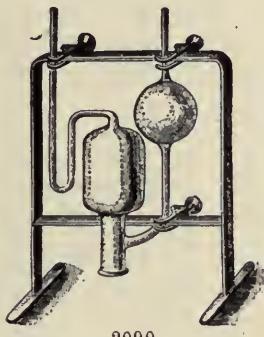


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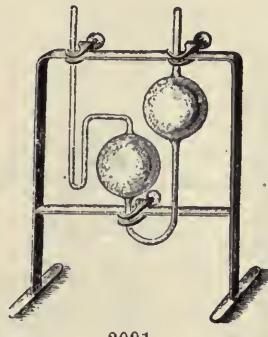
2071	Gas Burette, Bunte's. Graduated, with two stopcocks.....	\$ 6.00
2072	Same, complete with support and aspirator bottle	9.00
2073	Gas Burette, Elliott's. For furnace and illuminating gases, complete as per illustration.....	15.00
2074	The two burette parts only.....	12.00
2075	The explosion burette only.....	8.00
2076	Gas Burette, Hempel-Winkler's. With glass stopcocks, set of two complete on lead charged base	7.50
2077	Gas Burette, Winkler's. Complete with support.....	12.00
2078	The measuring tube and filling tube only.....	8.00
2079	The measuring tube only.....	6.00



No.						
2080	Gas Burette, Lunge's, 50 cc., without support.....					\$4.00
2081	Gas Measuring Tubes, Bunsen's.					
	Capacity 25 50 100 200 300 cc.					
	Grad. 1-5 1-5 ½ 1-1 1-1°					
	Each \$0.60 1.00 1.30 1.60 2.50					
2082	Gas Measuring Tubes, Bunsen's. With stopcock.					
	Capacity 50 100 cc.					
	Grad. 1-10 1-5°					
	Each \$2.00 2.50					
2083	Gas Eudiometer, Bunsen's. With platinum electrodes.					
	Capacity 300 500 700 800 mm. 50 cc. 100 cc.					
	Each \$1.60 2.00 2.50 3.00 1.80 2.25					
2084	Gas Eudiometer, Mitscherlich's. With stopcocks and platinum electrodes.					
	Capacity 50 100 cc.					
	Grad. 1-5 1-5°					
	Each \$3.00 3.50					
2085	Gas Eudiometer, Ure's. U form, with platinum electrodes.....					2.25
2086	Gasometer Tube, Baird's, with 2-way stopcock, capacity, 100 cc. graduated to 48 cc.					2.50
2087	Gasometer Tube, Mendelson's, with 3-way stopcock, capacity, 100 cc., graduated to 48 cc.					3.00



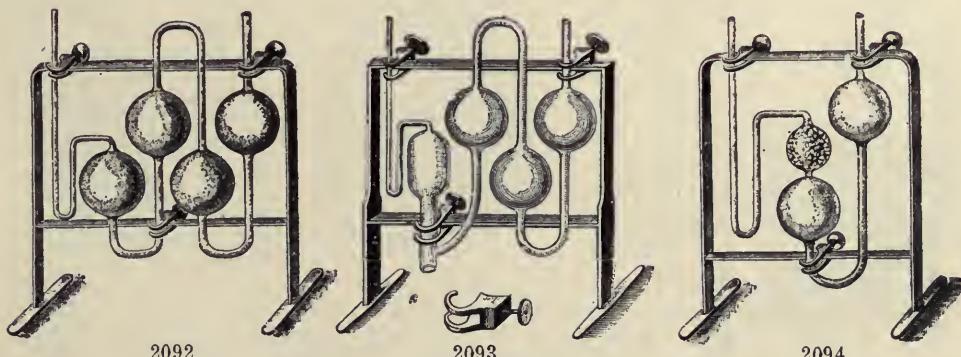
2090



2091

No.

2090	Gas Pipettes, Hempel's. Absorption, simple, for solids, mounted.....	\$3.00
	Glass part, alone.....	1.50
2091	Gas Pipettes, Hempel's. Absorption, simple, for liquids, mounted.....	3.00
	Glass part, alone.....	1.50



2092

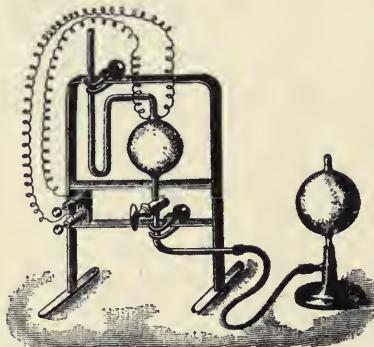
2093

2094

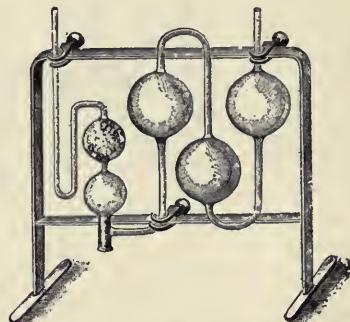
2092	Gas Pipettes, Hempel's. Absorption, compound, for liquids, mounted.....	\$4.00
	Glass part, alone.....	2.25
2093	Gas Pipettes, Hempel's. Absorption, compound, for solids, mounted.....	4.00
	Glass part, alone.....	2.25
2094	Gas Pipettes, Hempel's. Ethylene, bulb filled with glass beads, mounted..	4.00
	Glass part, alone.....	2.25



2095



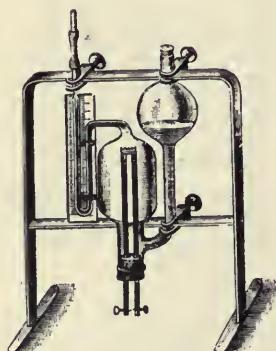
2096



2097

No.

2095	Gas Pipettes, Hempel's. Explosion, mounted.....	\$6.50
	Glass part, alone.....	4.00
2096	Gas Pipettes, Hempel's. Explosion, with leveling bulb.....	6.50
	Glass part, alone.....	4.00
2097	Gas Pipettes, Hempel's. Hydrogen, mounted.....	5.00
	Glass part, alone.....	2.75



2098

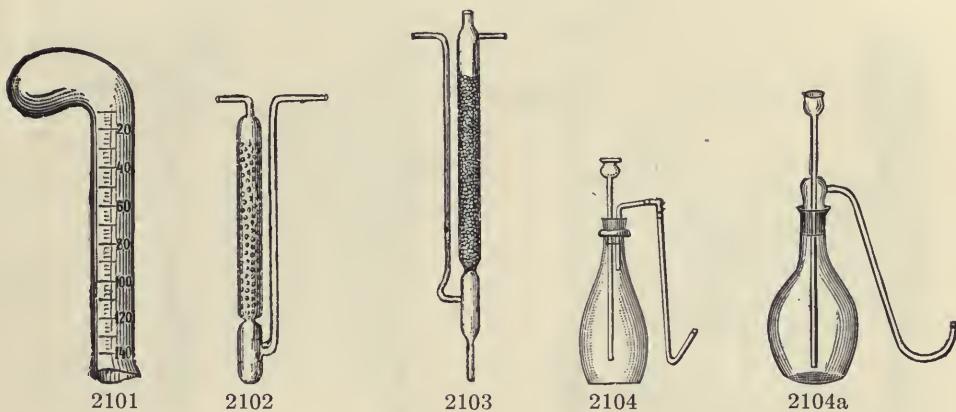


2099

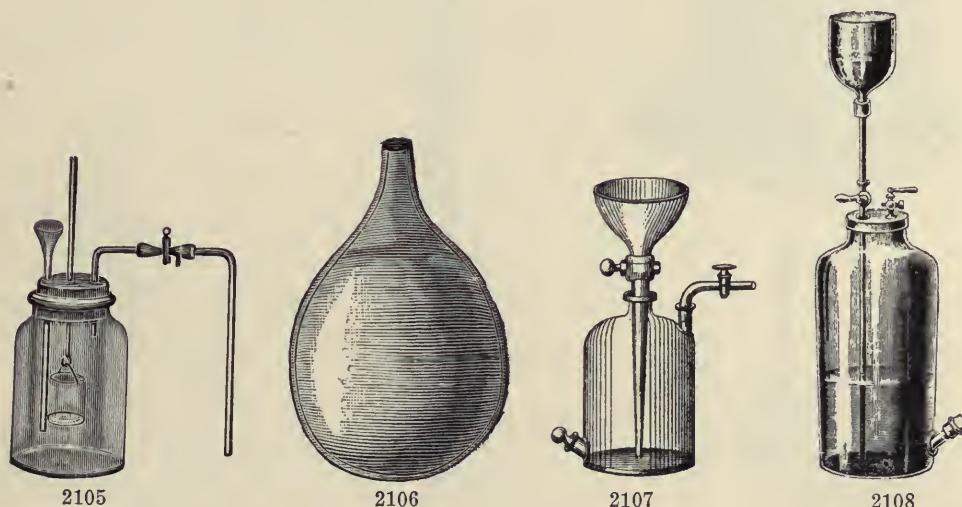


2100

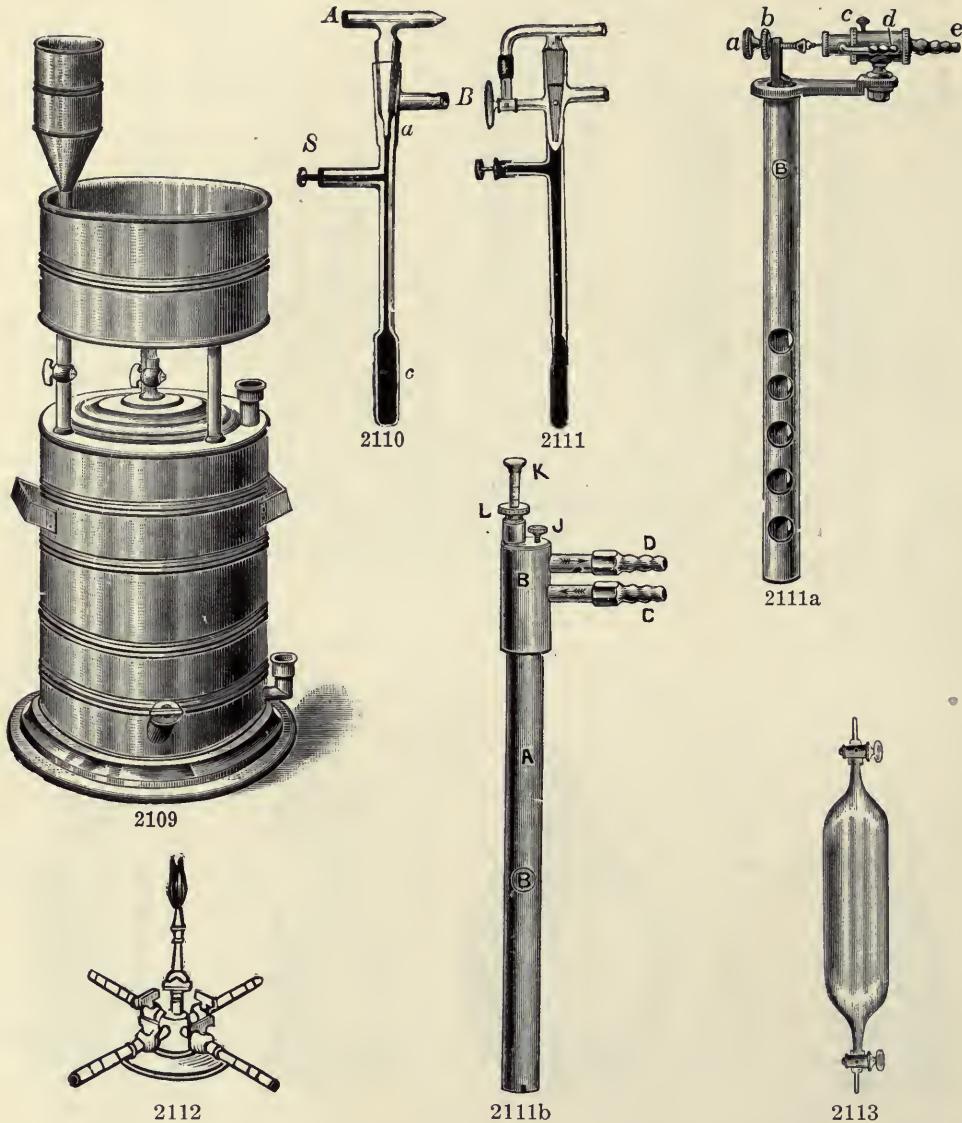
2098	Gas Pipettes, Hempel's. For estimation of methane, with platinum spiral	\$6.00
	Glass part, alone.....	2.50
2099	Hempel's Palladium Tube. For absorption; filled with palladium black...	2.50
2100	Gas Absorption Tube, Bunsen's, straight, graduated.....	1.00



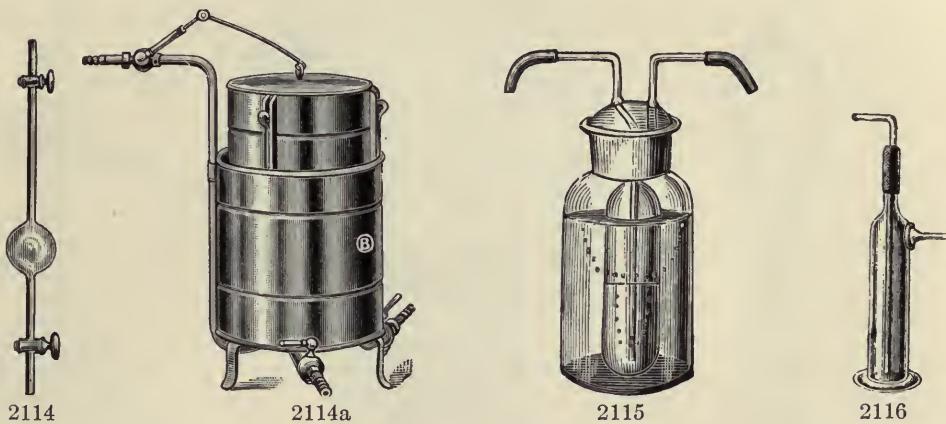
No.			
2101	Gas Absorption Tube, Bunsen's. With bulb, graduated.....		\$1.25
2102	Gas Absorption Tube, Babo's. Filled with glass beads.....		1.25
2103	Gas Absorption Tube, Emmerling's. Filled with glass beads.....		1.50
2104	Gas Generator, consisting of flask, funnel tube, and delivery tube. Pint size .....	.60	
2104a	Gas Generator, as above, with tubes ground into neck. Pint size.....		1.00



2105	Gas Generator, consisting of generating bottle, funnel tube, lead basket and delivery tube with pinchcock. Quart size.....	\$2.00		
See, also, Gas Generators, page 274.				
2106	Gas Bags, of best rubber, oval.			
Capacity 1 2 3 5 gal.				
Each	\$1.25	1.75	2.00	2.75
2106a	Brass Nozzle and Stopcock, for any bag.....	1.25		
2107	Gas Holder, Berzelius'. Entirely of glass, capacity 1 gal.....	9.00		
2108	Gas Holder, Mitscherlich's. Of glass with brass fittings, capacity 3 gals..	20.00		

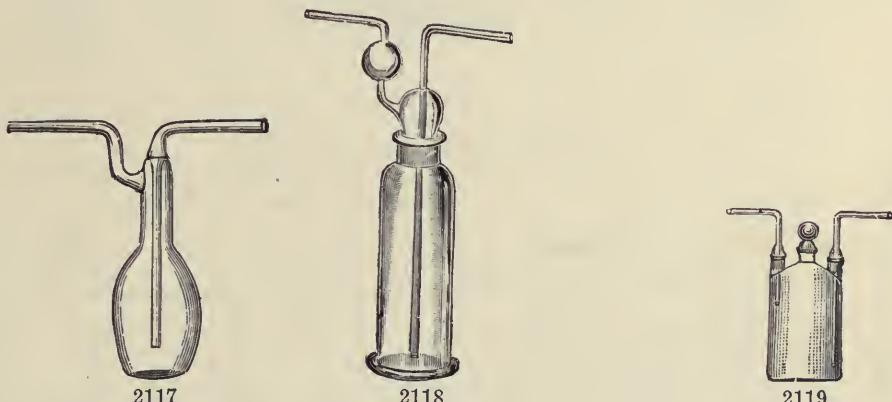


No.			
2109	Gas Holder, Pepy's. Of heavy zinc, improved form, capacity 10 gals.....	\$20.00	
2110	Gas Regulator, Reichert's.	2.50	
2111	Gas Regulator, Reichert's. With stopcock.....	4.00	
2111a	Gas Regulator, according to Roux, without the use of mercury or glass in its construction. Made in 2 sizes; small, 10 in., \$8.00; large, 12 in....	10.00	
2111b	Gas Regulator, Greenman's. Made entirely of steel (a special feature)...	12.50	
2112	Gas Distributors. With three stopcocks and center light.....	4.00	
2113	Gas Collecting Tubes. With stopcock at each end, capacity about 250 cc...	3.00	



No.

2114	Gas Collecting Tubes.	With bulb, stopcock at each end.....	\$3.00
2114a	Gas Pressure Regulator, Murrill's.	Latest and most convenient form, for use with a thermostat.....	8.00
2115	Gas Washing Bottles, Allihn's.	500 cc.....	1.75
2116	Gas Washing Bottles, Bunsen's.	With tube and rubber connections.	
	Size 7	9 in.	
	Each \$0.60	.75	



2117 Gas Washing Bottles, Cloez's.

Capacity 8 16 oz.

Each \$1.00 1.25

2118 Gas Washing Bottles, Drechsel's, with tubes ground into neck.

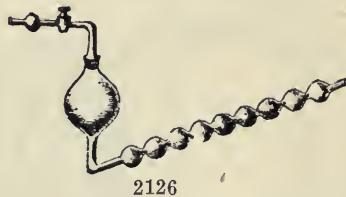
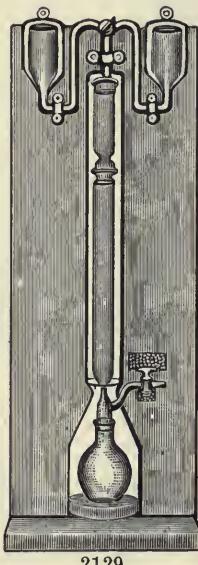
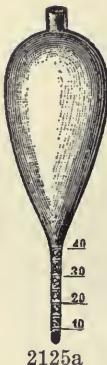
Capacity 8 16 oz.

Each \$1.00 1.25

2119 Gas Washing Bottles, with two tubes ground into neck, and glass stopper.

Capacity 125 250 500 grms.

Each \$1.00 1.25 1.50



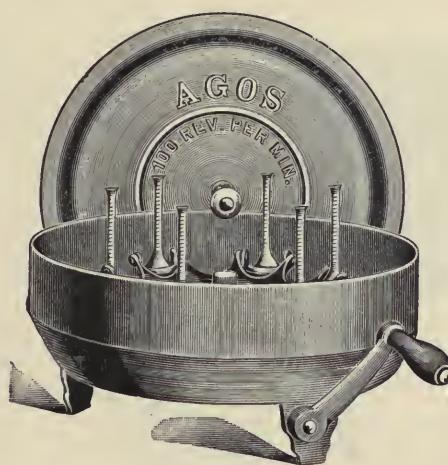
H. IRON AND STEEL ANALYSIS.

No.

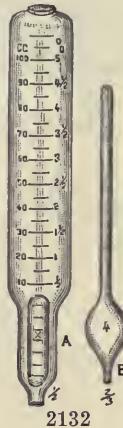
2121	Dudley's Apparatus. For determination of sulphur in iron and steel by bromine method	\$ 3.50
2122	Same with improved bromine holder.....	6.00
2123	Bubble Tubes for above apparatus.....	.50
2124	Dudley's Complete Sulphur Determination Apparatus. With support and clamps	14.00
2125	Same as above, glass parts only.....	10.00
2125a	Goetz's Tube, for phosphorus determination.....	1.25
2126	Meyer's Sulphur Determination Apparatus.....	2.75
2127	Norris' Sulphur Determination Apparatus. Either to be used for Elliott's iodine, or Brown's potassium permanganate method.....	2.25
2128	Uehling's Manganese Determination Apparatus.....	5.00
2129	Jones' Reductor, complete on stand.....	20.00
2130	Carbon Tubes, Eggertz', for the calorimetric determination of Carbon and Manganese in steel.	
		25 cc. 1-10
2130a	Straight, set of 2	\$2.50
	Straight, set of 4	5.00
2130b	Bent ends, set of 2	2.75
	Bent ends, set of 4	5.50
		50 cc. 1-10
		\$3.00
		6.00
		3.50
		7.00



2131



2131



2132

1. MILK ANALYSIS.

No.

2131 Babcock's Milk Tester. With directions.

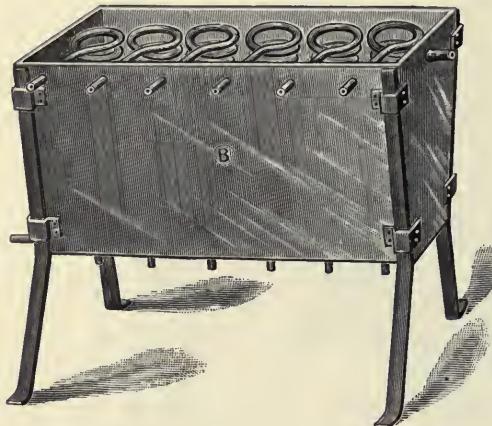
(a) Four-bottle test	\$ 8.00
(b) Six-bottle test	10.00
(c) Eight-bottle test	11.00
(d) Ten-bottle test	12.50

Note:—With each machine is included a full set of milk bottles, one skim milk bottle, pipette, acid measure and acid.

Extra Milk Bottles, 10%	Each, \$0.15; Doz. 1.50
Extra Cream Bottles, 30%	" .20; Doz. 2.00
Extra Cream Bottles, 50%	" .25; Doz. 2.50
Extra Skim Milk Bottles, double neck	" .75; Doz. 7.50
Extra Measures, 17.5 cc.	" .10; Doz. 1.00
Extra Pipettes, 17.6 cc.	" .15; Doz. 1.50

2132 Lactoscope, Feser's. Put up in fine case, with directions.....	3.50
2133 Pioscope, Heeren's. Testing by color of the milk, with directions.....	.50
2134 Milk Absorbing Paper, Adams'. Absolutely fat free, in strips 6.5 x 56 ctm., 50 in a package.....	2.50
2135 Hofmeister's Dishes; for evaporating, of very thin glass.....	.125
2135a Cream Tubes. Giving direct percentage of cream.....	.50
2136 Creamometer, Chevalier's. Giving direct percentage of cream, with red lines	1.00
2137 Lactobutyrometer, Marchand's. On foot.....	1.00
2138 Lactobutyrometer, Soxhlet's. For the areometric determination of fat in milk, complete with two lactometers, instructions and tables.....	30.00
2139 Holt's Apparatus for testing human milk	2.50

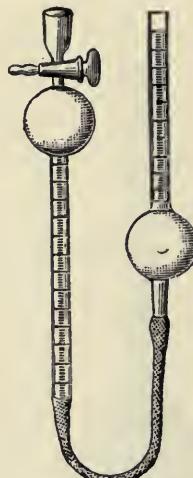
See, also, Hydrometers for Milk on page 206.



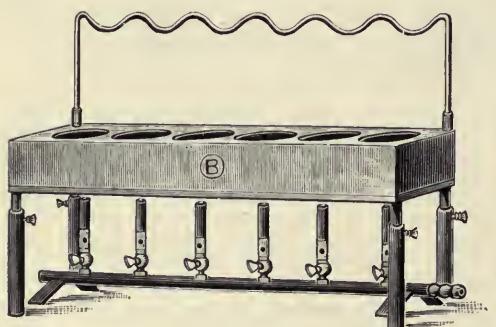
2141



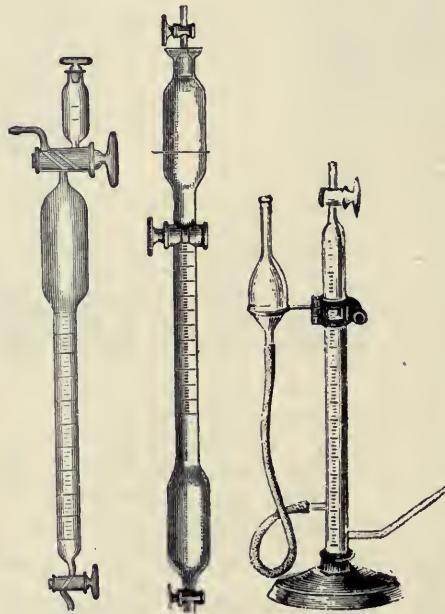
2143



2148

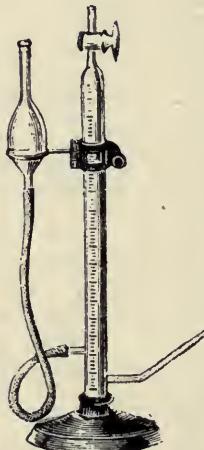


2142



2147

2147a

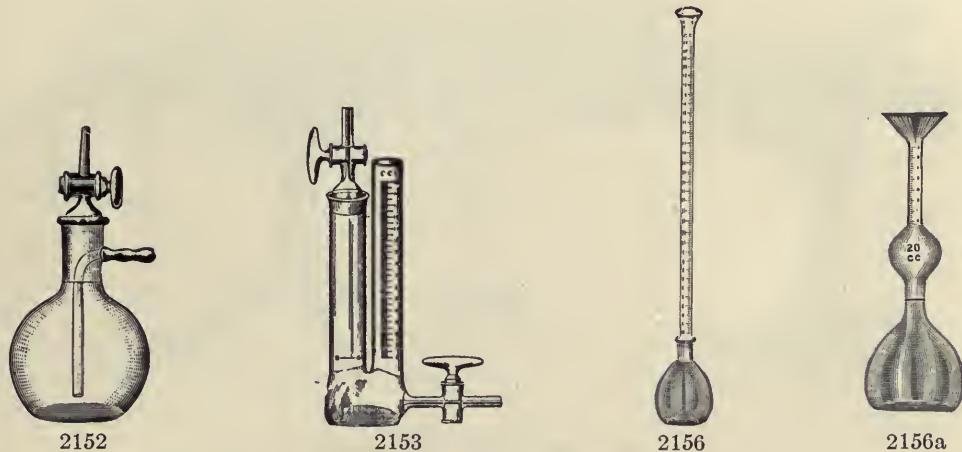


2149

J. NITROGEN DETERMINATION.

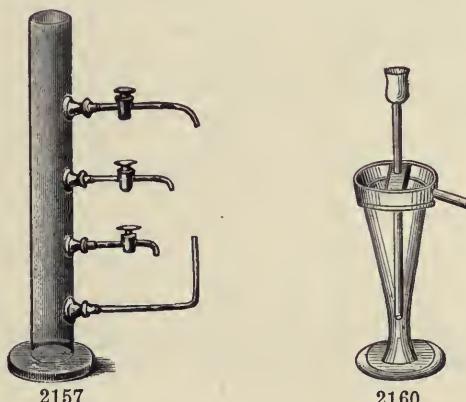
No.

2141	Kjeldahl's Condensers. Of copper, tin-lined, 6 coils of pure block tin.....	\$25.00
2142	Kjeldahl's Digesting Shelf. Square, with 6 burners and stopcock.....	18.00
2143	Kjeldahl's Connecting Bulb Tubes	Each .40
2144	Kjeldahl's Digesting Flasks. Capacity 6 oz.....	Each, \$0.30; doz. 3.00
2145	Kjeldahl's Distilling Flasks. Capacity 16 oz.....	Each, .30; doz. 3.00
2146	Bunte's Nitrometer. 100 cc. 1-5.....	6.00
2147	Bunte's Nitrometer. Improved form.....	7.50
2147a	Franke's Nitrometer	8.00
2148	Lunge's Nitrometer. For determination of nitrogen in saltpetre, nitro-glycerine, etc.; graduated 50 cc. in 1-10°, without support.....	6.00
2149	Schiff's Nitrometer, complete as per sketch.....	6.00
2150	Horn's Nitrometer. For determining N in gunpowder, with leveling tube..	7.50



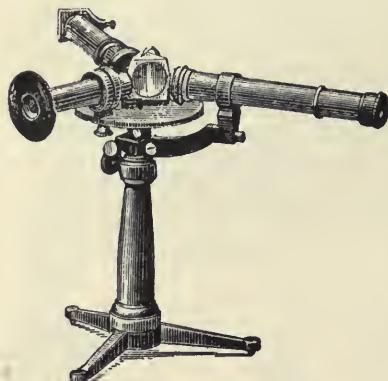
K. SPECIFIC GRAVITY DETERMINATION.

No.			
2151	Bunsen's, for gases		\$1.50
2152	Chancel's, for gases.....		4.00
2153	Greiner's, for liquids and solids.....		5.00
2154	Nicol's, for liquids .....		.50
2155	Nicol's, for solids .....		.60
2156	Schumann's, for cement		2.25
2156a	Le Chatelier's, for cement		2.00

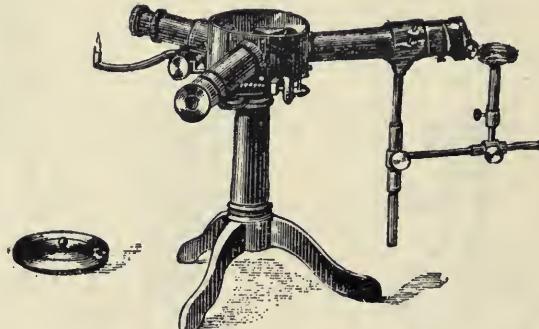


L. SOIL ANALYSIS.

2157	Knop's, cylinder with stopcocks	\$12.00
2158	Noebel's, complete on stand	10.00
2159	Noebel's, the four glass parts only	4.00
2160	Schultz's, conical form	2.50



2163



2164

M. SPECTRUM ANALYSIS.

No.

2161	Spectroscope, pocket instrument, with adjustable slit.....	\$14.00
2162	Spectroscope, as above, with comparison prism.....	20.00
2163	Spectroscope, for schools, with flint glass prism of 60° fixed to a brass plate. The telescope has an aperture of 20 mm., 143 mm. focal distance, magnifying power five times. The collimator has the same dimensions and micrometer screw, dispersion 4°. Complete with scale tube and comparison prism.....	50.00
2164	Spectroscope, Kirchoff-Bunsen's, with covered flint glass prism, two telescopes of 22 mm. aperture and 182 mm. focus; scale tube, adjustable slit and comparison prism; observation telescope movable by micrometer screw. Complete with universal holder, as shown in sketch....	100.00
	Larger Spectroscopes quoted on application.	
2165	Spectrum Bottles, with parallel sides, stoppered, 25 x 8 mm., capacity 2 cc. each .....	.40
2166	Spectrum Bottles, square, long shape, ground edges. Length 5 10 15 cm. Each \$0.50 .60 .70	

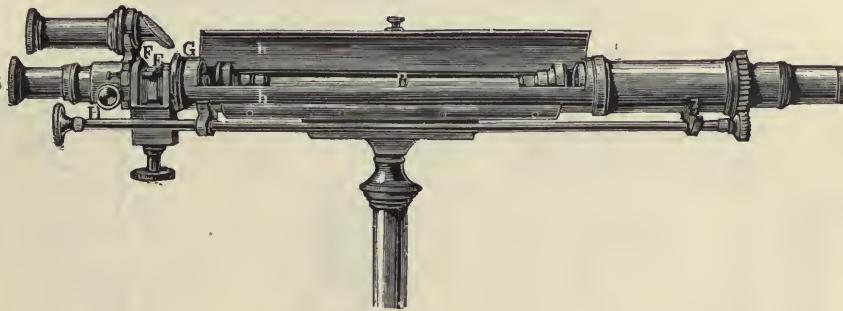


2167



2168

2167	Spectrum Tubes, filled with gases.....	\$2.00
2168	Spectrum Tubes, with two stopcocks, for self-filling.....	3.50
2169	Spectrum Charts, small, plain.....	.40
2169a	Spectrum Charts, small, colored.....	.75
2170	Spectrum Charts, large	3.50



2171

No.

2171	Polariscope, Schmidt & Haensch's, half shade, of latest construction, with new reading arrangement and protecting cap for the wedge compensation on tripod stand.	
	(a) For 100 and 200 mm. tubes.....	\$190.00
	(b) For 100, 200 and 400 mm. tubes.....	210.00
2172	Polariscope, with triple field of vision, instead of half shade, additional ...	40.00
2173	Polariscope, Schmidt & Haensch's, half shade, with double quartz compensation, of latest construction with Lippich's polarizer, new reading arrangement, and protecting cap for the wedge compensation, on tripod stand.	
	(a) For 100 and 200 mm. tubes	270.00
	(b) For 100, 200 and 400 mm. tubes.....	290.00
2174	Polariscope, with triple field of vision, instead of half shade, additional... N. B.—Instead of the tripod stand we furnish the above instruments also on trestle stand (Bockstativ) at an additional cost of.....	40.00
		20.00
2175	Polariscope Lamp, for gas, nickel-plated, with argand burner.....	8.00
2176	Polariscope Lamp, for kerosene, nickel-plated, with round burner.....	8.00
2177	Polariscope Lamp, for kerosene, double burner, after Hink.....	12.00
2178	Polarization Tubes, of glass, mounted.	
	Size 50 100 200 400 mm. long.	
	Each \$3.00 3.25 3.50 4.00	
2179	Polarization Tubes, of glass, new style, with enlargement at end to receive the air bubbles.	
	Size 50 100 200 400 mm. long.	
	Each \$3.25 3.50 3.75 4.00	
2179a	Polarization Tubes, of metal, mounted and nickel-plated.	
	Size 50 100 200 400 mm. long.	
	Each \$3.25 3.50 3.75 4.00	
2180	Polarization Tubes, Pellet's, for continuous flow, of metal.	
	Size 100 200 400 mm. long.	
	Each \$7.50 8.00 8.50	
2181	Inversion Tube, of glass, with water jacket of brass.	
	200 mm. long.....	7.25
	Thermometer for same.....	2.50
2182	Glass Covers, for above tubes. (a) Domestic, doz. \$1.00; (b) imported, doz.	1.75
2183	Rubber Washers, for above tubes.....	.20
2184	Quartz Testing Plates, for adjusting the polariscope, about 50° or 100°, mounted	10.00
	For other accessories, used in cane and beet sugar analysis, such as flasks, hydrometers, pipettes, etc., see in first part of catalogue under their respective headings, or write for our special list.	

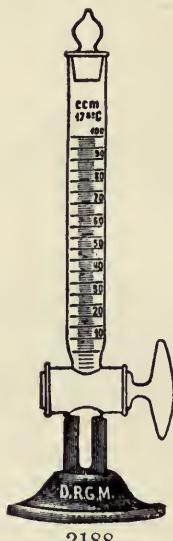
URINE ANALYSIS



2185



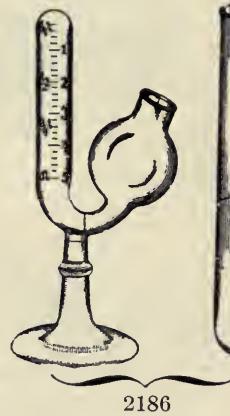
2185b



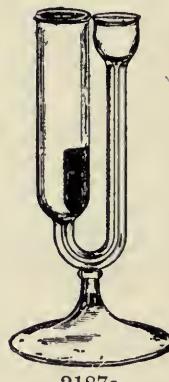
2188



2185a



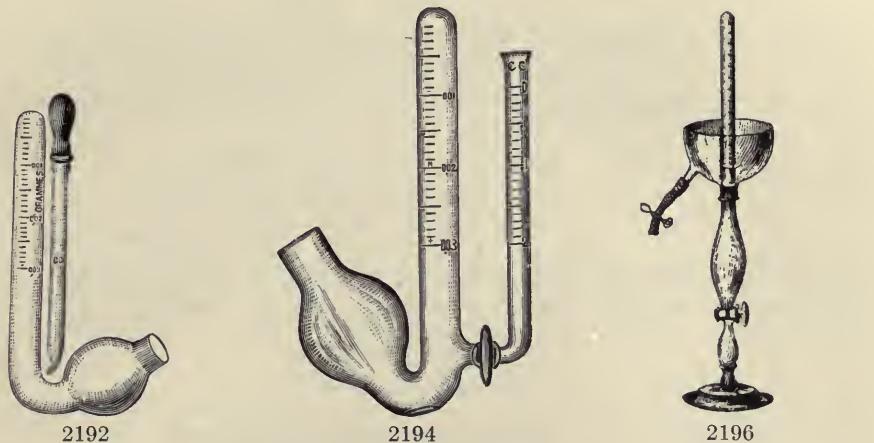
2186



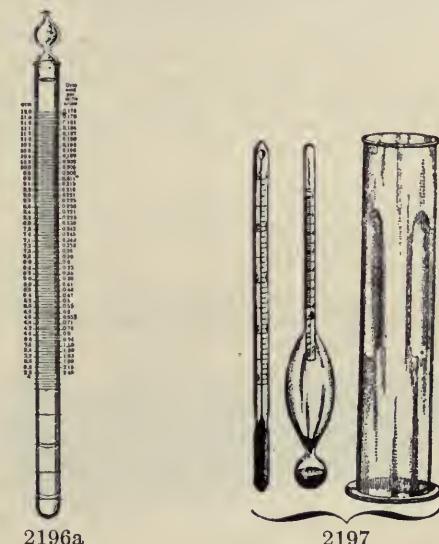
2187a

O. URINE ANALYSIS.

No.			
2185	Albumenometer, Esbach's. For estimation of albumen in urine	\$0.75	
2185a	Albumenometer, Esbach's, on glass foot, with pointed bottom for reading small quantities	1.00	
2185b	Fermentation Tubes, Smith's, 5 in. high, ungraduated .....	.30
2186	Saccharometer, Einhorn's. For estimation of sugar in urine, complete with marked test tube.....	.75	
2187	Saccharometer, Einhorn's. Set of two with graduated test tubes, in box..	1.50	
2187a	Horismoscope, for detecting albumen by nitric acid.....	1.00	
2188	Purinometer, Hall's. For estimating the amount of "Purin" nitrogen in urine, with directions for use	10.00	
2189	Urea Apparatus, Marshall's. For estimation of urea in urine	3.00	
2190	Urea Apparatus, Squibb's. For estimation of urea in urine.....	3.00	
2191	Urea Apparatus, Bartley's. For estimation of urea in urine.....	1.25	



No.			
2192	Urea Apparatus, Doremus'.	For estimation of urea by action of sodium hypobromite	\$1.25
2193	Urea Apparatus, same,	on glass foot	1.50
2194	Urea Apparatus, Doremus' improved.	The 1 cc. pipette being connected with the ureometer by a stopcock, a much greater accuracy can be obtained	3.00
2195	Urea Apparatus, same,	on glass foot.....	3.50
2196	Urea Apparatus, Huefner's.	For determination of nitrogen in urea.....	5.00



2198	Urinometer, Ruhemann's,	for the rapid examination of uric acid	\$3.00
2197	Urinometer, Squibb's.	With thermometer	2.00
2198	Urinometer, Squibb's.	Without thermometer	1.00
2199	Urinometer, Vogel's.	1.0 to 1.06 on one spindle .....	.60
2200	Urinometer, Vogel's.	1.0 to 1.06 on two spindles	Set 1.00
2200a	Urinometer, Vogel's.	1.0 to 1.06 with thermometer	1.50

PART III

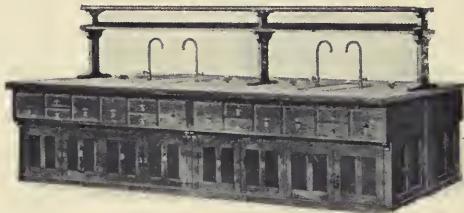
- a. ESTIMATE OF LABORATORY EQUIPMENT.
- b. OUTFITS FOR ASSAYERS AND PROSPECTORS.
- c. SCHOOL SETS OF CHEMICAL APPARATUS.
- d. COLLECTIONS OF MINERALS, MODELS AND CHARTS.
- e. SCIENTIFIC BOOKS.

**ESTIMATE OF LABORATORY
EQUIPMENT
FOR EIGHT STUDENTS.**

Every item in the following list is of the best and most serviceable material obtainable. We respectfully desire to call your attention to the fact that our DUTY FREE IMPORT DEPARTMENT is conceded to be superior to anything of its kind in this country.

LABORATORY DESK.

Specifications.



3900

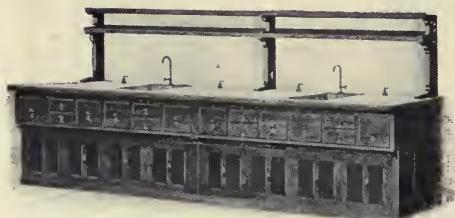
Size—Top measures 12 ft. long x 4 ft. wide, 3 ft. high.

Construction—The top is constructed of hardwood strips, dressed to $1\frac{3}{4}$ in. thickness, matched and glued, which gives hard, smooth working surface and prevents warping. The cabinet is also made of dressed hardwood and solidly put together. The reagent bottle shelves are divided and made with retaining rims.

Drawers—Each student is provided with four drawers and one double cupboard. Larger drawers measure inside 10"x16"x8" deep. Smaller drawers all measure inside 8"x16"x3 $\frac{1}{2}$ " deep.

Cupboards—Cupboards all measure inside 16"x16 $\frac{1}{2}$ "x18" high.

Locks—All locks are masterkeyed and two masterkeys to pass all locks are supplied with each order. All drawers and cupboards are therefore accessible to the instructor and each student can unlock only his own section.



3900a

Plumbing—Desks are supplied with two enameled iron sinks 16x24", four nickel-plated water cocks, two of which are threaded for attaching aspirators, four nickel-plated double gas cocks (8 outlets), water, gas and waste pipe complete to the floor line.

Finish—Top and reagent bottle shelves are finished black acid proof and balance of desk one coat filler, two coats of varnish, antique, unless otherwise ordered.

Weight—Crated, 1,500 pounds.

Desks are made in sections small enough to take through narrow doors.

SCALE, BALANCES AND WEIGHTS.

No.

309a 1 Union Scale with two platforms, scoop capacity from $\frac{1}{2}$ oz. to 30 lbs. Platform capacity up to 240 lbs., size of platform $10\frac{1}{2} \times 13\frac{1}{2}$ ".

281 1 Moisture Scale D. F. C., beam graduated in percentages and pounds. Very accurate.

320a 2 Scale Covers of rubber sheeting, dust proof, made to fit balances selected.

338 2 Sets Becker's Imported Gramme Weights, 50 grammes to 1 milligramme, and three Riders.

228 2 Thompson's Chemical Balances, style No. 31, 6-inch beam, sensibility 1-10 milligramme, single riders, steel knife edges and agate bearings, fall away pan rests and leveling screws, mahogany case, size $20 \times 17 \times 10$.

OR,

229 2 Ainsworth Analytical Balances, Type Q, 7-inch beam; sensibility, 1-20 milligramme; capacity, 200 grammes. Hard rolled nickelized aluminum beam, agate edges and bearings, double rider, skeleton hangers, two level vials in base. Plate glass covering entire base, all metal work gold plated except center bearings and drop levers. Polished mahogany case, dimensions, $20 \times 20 \times 10$; weight, packed, 60 lbs.

If this type of Balance is selected, add to total estimate \$60.00 each.

OR,

240 2 Becker 8A Analytical Balances; sensibility, 1-20 milligramme; capacity, 200 grammes; agate bearings and edges, 5-16 plate glass base, beam graduated 1-10 milligramme, double rider, mahogany case.

If this type is selected, add to total estimate \$60.00 each, the same as in the case of the Ainsworth Balance.

GLASSWARE.

414 25 Nests, Nos. 1 to 6, Bohemian style, Griffin's Lipped Beakers.
8 Sets Reagent Bottles of 12 each, made from glass containing no lead, zinc or other metallic flux; with raised letters ground on the surface, giving name and formula of reagent. Each set to consist of—

1—Hydrochloric acid Conc.	1—Nitric acid Dil.
1—Hydrochloric acid Dil.	1—Ammonium hydroxide.
1—Acetic acid.	1—Ammonium chloride.
1—Sulphuric acid Conc.	1—Ammonium sulphide (amber).
1—Sulphuric acid Dil.	1—Potassium hydroxide.
1—Nitric Acid Conc.	

All the above bottles to be of 8 oz. capacity.

2 Sets Reagent Bottles of four each, similar to specification of previous item except to consist of—

1—Ammonium hydroxide.	1—Nitric acid.
1—Sulphuric acid.	1—Hydrochloric acid.

All above bottles to be 16 oz. capacity.

1 Set of Reagent Bottles of 4 oz. capacity, as follows—

1—Hydrogen sulphide.	1—Calcium hydroxide.
1—Potassium ferrocyanide.	1—Magnesium sulphate.
1—Potassium sulphocyanide.	1—Mercuric chloride.
1—Potassium carbonate.	1—Silver nitrate.
1—Potassium sulphate.	1—Lead acetate.
1—Potassium iodide.	1—Ferrous sulphate.
1—Potassium ferricyanide.	1—Ferric chloride.
1—Potassium hydroxide.	1—Alcohol.
1—Ammonium sulphide.	1—Ammonium sulphocyanide.
1—Ammonium chloride.	1—Barium hydroxide.
1—Ammonium carbonate.	1—Barium carbonate.
1—Ammonium oxalate.	1—Ether.
1—Sodium phosphate.	1—Cupric sulphate.
1—Barium chloride.	1—Sodium carbonate.
1—Calcium chloride.	1—Sodium hydroxide.
1—Calcium sulphate.	3—Blank label bottles.

No.

510 2 Doz. 1-gallon Green Glass so-called Acid Bottles, for storage of standard solutions.

504 2 Doz. Bottles, 2-oz., extra wide mouth, flint glass, for salts.

522 10 Dropping Bottles, indicator containers.

534 1 Doz. Wash Bottles, 24-oz., complete with Rubber Stoppers and Glass Tubes.

573 1½ Doz. Burettes, Mohr's, with Geissler's Glass Stopcock, 50 cc. capacity graduated in 1-10 cc.'s.

925 1 Doz. Funnel Tubes, bent, thistle top.

1001 5 Lbs. Soft Glass Tubing, 5 mm. outside diameter.
5 Lbs. Soft Glass Tubing, 7 mm.
2½ lbs. Soft Glass Rods, 5 mm.

1222 ½ Doz. ½-Gallon Percolators, conical form, flint glass.

1234 1 Doz. Volumetric Pipettes, most accurately graduated, capacity 10 cc.
½ Doz. Volumetric Pipettes, most accurately graduated, capacity 25 cc.

1430 2 Sulphuretted Hydrogen Generators, Kipp's form.

1491 3 Gross Test Tubes, best German glass, well annealed, free from lead, each piece wrapped in paper 6" x 5¾".
1 Gross Test Tubes, best German glass, well annealed, free from lead, each piece wrapped in paper 3" x ¾".

862 ½ Doz. Filter Flasks, conical, with side neck, for use with filter pump, capacity 8 oz.

753 1 Doz. Graduated Cylinders, with lip, double graduation in cc.'s up and down, capacity, 50 cc.'s.
2 Graduated Cylinders, with lip, double graduation in cc.'s up and down, capacity, 500 cc.'s.
1 Graduated Cylinder, with lip, double graduation in cc.'s up and down, capacity, 1000 cc.'s.

764 1 Doz. Scheibler's Dessicators, with knob top, ground air tight; diameter, 6".

854 3 Doz. Copper Determination Flasks, made of Resistance glass, pear-shaped, wide mouth and broad flange; capacity, 8 oz.

853 1 Doz. Erlenmeyer Flasks, Resistance glass; capacity, 4 oz.
1 Doz. Erlenmeyer Flasks, Resistance glass; capacity, 6 oz.

870 8 Only Volumetric "Litre Flasks," most accurately graduated; capacity, 1000 cc.
8 Only Volumetric "Litre Flasks," most accurately graduated; capacity, 250 cc.

905 2 Doz. Bunsen Funnels, with thin and extra long stems, top ground even and stem ground to a point. Angle, 60°; diam., 2½".
2 Doz. Bunsen Funnels, with thin and extra long stems, top ground even and stem ground to a point. Angle, 60°; diam., 3".

No.

- 901 1/2 Doz. Funnels; diam., 8", best German glass.
- 1501 1 Thermometer, Chemical, scale engraved on stem, with white back, very exact, in pasteboard case, graduated to 200° C.
- 1294 1/2 Doz. Potash Bulbs, Geissler's, plain, for steel analysis.
- 1566 1 Doz. Calcium Chloride Tubes, Volhard's; length, 5".
- 1584 1 Doz. Gooch Filtering Tubes for Gooch crucibles.
- 1601 4 Doz. Watch Glasses, well annealed, with ground edges; diameter, 2½".
4 Doz. Watch Glasses, well annealed, with ground edges; diameter, 3".
4 Doz. Watch Glasses, well annealed, with ground edges; diameter, 4".
4 Doz. Watch Glasses, well annealed, with ground edges; diameter, 5".
- 319 2 Sets, 4 Each, Scale Feet, for holding leveling screws of balances, giving perfect insulation.

PORCELAIN WARE.

- 635a 1 Doz. Casseroles, German porcelain; capacity, 4 oz.
1 Doz. Casseroles, German porcelain; capacity, 8 oz.
- 661 1 Doz. Color Test Plates, with 12 cavities; size, 3¼ x 4¼".
- 716 3 Doz. Crucibles, Royal Berlin porcelain, with covers, glazed inside and outside, No. 00; size, 1¼"; capacity, ½ oz.
1 Doz. Crucibles, Royal Berlin porcelain, with covers, glazed inside and outside, No. 2; size, 2"; capacity, 1¾ oz.
- 787 1 Doz. Evaporating Dishes, German porcelain, glazed inside with heavy rim, No. 9; capacity, 12 oz.
- 723 1 Doz. Gooch Crucibles, Royal Meissen porcelain, with perforated bottom, and cover.

PLATINUM WARE.

- 3 Ft. No. 27 Platinum Wire.
- 1257 4 Platinum Crucibles, with Covers, best hammered ware; capacity, 15 cc.'s; weight, 15 grammes each.
- 1259 1 Platinum Cylinder and Spiral for quantitative determination of copper by electrolysis; cylinder, 2" x 1"; total weight, about 20 grammes.

MATERIAL OF IRON.

- 434 1 Bunsen's Blast Lamp for gas, improved form.
- 603 1 Doz. Bunsen Burners, usual size, with air regulation.
- 624 1 Fletcher's Radial Burner for hood purposes.
- 848 1 Richards Filter Pump.
- 1056b 1 Electric Hot Plate, three heats, from 100° to 600° F.; size, 12" x 24".
- 1286 1 Pair Pliers, side cutting, steel; length, 5".
- 1361 1 Doz. Sand Baths, sheet iron, shallow; diameter, 4".
- 1372 1 Nest Sieves, 10, 20, 30, 40, 60, 80, 100, 120, 150, 200 mesh, ten in each nest, diameter, 8".
- 1387 1 Doz. Spatulas, steel, with cocoa wood handle; length of blade, 4".
- 1452 8 Rectangular Base Ring Stands for flasks, retorts, etc., complete with 2", 3" and 4" rings.
- 651 8 Burette Clamps of iron, with set screws to attach to retort stand.
- 816 1 Doz. Triangular Files; length, 4".

No.

1552 1½ Doz. Iron Tripods for Bunsen burners.
1525 1 Doz. Crucible Tongs, rod iron, double bent, japanned; length, 9".

MATERIAL OF WOOD.

1446 1 Doz. Burette Supports, hardwood clamp, lined with cork, holding two burettes each.
1457 1 Doz. Funnel Supports, one double arm for four funnels.
1464 8 Test Tube Racks, for 13 tubes, in two shelves, with 7 pins and $\frac{7}{8}$ " holes.

RUBBER MATERIAL.

441 1 Fletcher's Blower, foot bellows, gives continuous blast of air; No. 9; diameter, $7\frac{1}{4}$ ".
1338 18 Sq. ft. Black Rubber Sheeting, vulcanized on muslin.
1336 5 Lbs. Rubber Stoppers, assorted sizes, solid, 1 hole and 2 holes.
1342 48 Ft. 3-16" Pure Gum Rubber Tubing.
48 Ft. $\frac{1}{4}$ " Pure Gum Rubber Tubing.
1345a 48 Ft. $\frac{1}{4}$ " Rubber Tubing, white, light wall, hand made, for gas connections.
1344 2 Ft. Gooch Rubber Tubing, band, pure gum, light walls, for Gooch crucibles.

MISCELLANEOUS.

557 1 Doz. Brushes, bristle, for test tubes, with sponge ends for protection to test tube ends.
558 4 Brushes, bristle, for burettes; length, 3 ft.
553 1 Doz. Camel Hair Brushes, extra large stock, quill holder, $\frac{1}{2}$ ".
1102 1½ Doz. boxes Gummed Labels, colored rims, No. 261.
1½ Doz. boxes Gummed Labels, colored rims, No. 201.
1151 1 Agate Mortar, with Pestle, best quality agate, size $3\frac{1}{2}$ ".
1398 1 Ralston New Process Still, of copper-plated pure block tin, with Pura Germ Proof Aerating Cap; diameter, 9"; height, $14\frac{1}{2}$ ".
642 1 Doz. Test Tube Clamps of spring wire, for all sizes test tubes.
644 1 Doz. Chaddock Beaker Clamps of japanned spring wire, rubber covered jaws.
646 2 Doz. Pinchcocks, nickel plated, strong spring.
648 1½ Doz. Clamps for rubber tubing; width, $1\frac{1}{4}$ ".
681 3 Gross Assorted Corks.
725 8 Nickel Crucibles of pure nickel for Alkaline fusions.
809 1 Drying Oven, single wall, of copper, with opening for thermometer, movable shelf and extra sheet iron bottom.
821 5 Pkgs. Prat-Dumas Filter Paper, diameter 8".
827 2 Doz. pkgs. S. & S. "White Ribbon" Filter Paper, washed with Hydrochloric and Hydrofluoric acids, quick filtering and retaining BaSO₄; diameter, 9 cm.
2 Doz. pkgs. S. & S. "White Ribbon" Filter Paper, washed with Hydrochloric and Hydrofluoric acids, quick filtering and retaining BaSO₄; diameter, 7 cm.
1546 1 Doz. Pipe Stem Triangles, improved form, small.
1 Doz. Pipe Stem Triangles, improved form, medium.
1 Doz. Wire Gauze, with asbestos center, 6" square.
1 Hendryx 14" Combination Agitator and Filter for cyanidation tests; capacity, 20 lbs. ore, 40 lbs. solution; shipping weight, 100 lbs.

We have only intended to itemize here all the articles that would be included in a fairly complete laboratory equipment, to be used as a memorandum. It will not fill all requirements, but we offer it as a suggestion to assist in compiling a list. The price will naturally vary to conform to different specifications.

Please select your list, giving catalogue numbers, and let us quote you a net price.

**SET OF BLOW PIPE APPARATUS, AS DESCRIBED IN "BROWN'S
MANUAL OF ASSAYING."**

No. 4000—

1	1 Set (3) Porcelain Dishes.	17	1 Set Moulds and Stamps.
2	1 Diamond Steel Mortar.	18	1 Pair Nippers.
3	1 Pair Platinum Pointed Forceps.	19	1 Double Lens.
4	1 Pair Heavy Tip Steel Forceps.	20	1 Knife.
5	1 Pair Steel Forceps.	21	1 Dropping Pipette.
6	1 Steel Chisel.	22	1 Camel Hair Brush.
7	1 Charcoal Borer, Club Shape.	23	6 Matrasses.
8	1 Charcoal Borer, with Spatula.	24	1 Glass Alcohol Lamp.
9	1 Pair Scissors.	25	1 Chamois Skin.
10	1 Platinum Holder, with 6 Wires.	26	6 Glass Tubes.
11	1 Plattner's Blow Pipe Lamp with Swivel.	27	½ Doz. Charcoals.
12	1 Charcoal Saw.	28	Coal and Ash Trays.
13	1 Matrass Holder.	29	2 Books Test Papers.
14	1 Plattner's Blow Pipe, nickel-plated.	30	Frame, with 18 Glass-Stoppered and Labeled Reagent Bottles, containing the following reagents:
15	1 Platinum Tip for same.		
16	1 Steel Hammer with Wire Handle.		
	Test Lead.		Carbonate Soda.
	Tin.		Potash Oxalate.
	Phosphorus Salt.		Salt.
	Borax Powder.		Soda Nitrate.
	Borax Glass.		Charcoal.
	Boracic Acid, fused.		Bone Ash, sieved.
	Boracic Acid, cryst.		Bone Ash, washed.
	Plattner's Flux.		Copper Oxide.
	Bismuth Flux.		Bisulphate Potash.

Price for complete set, securely packed in neat wooden carrying case, including
 "Quantitative Assaying with the Blowpipe," by E. L. Fletcher Net \$30.00

PROSPECTORS' BLOW PIPE OUTFIT NO. 1.

No. 4010—

1	Jewelers' Blow Pipe, nickel-plated.	1	Piece Iron Wire.
1	Alcohol Lamp.		Platinum Wire and Holder.
1	Magnifying Lens, double.	3	Carbon Sticks.
1	Porcelain Mortar, 2¼ in.	1	Pkg. Filter Paper.
2	Porcelain Crucibles.	2	Drs. Ferrous Sulphate.
2	Porcelain Crucible Covers.	2	Drs. Borax Glass.
1	Funnel, Glass, 2-in.	2	Drs. Oxalic Acid.
1	Doz. Test Tubes, 3-in.	2	Drs. Sodium Carbonate, dry.
1	Doz. Glass Tubes and Rods, assorted.	1	Oz. Sulphuric Acid, c.p. conc.
3	Small Beakers, 0 to 000.	1	Oz. Muriatic Acid, c.p. conc.
1	Pair Slag Forceps.	1	Lb. Nitric Acid, c.p., conc.
1	Spatula, 3-in.	1	Lb. Ammonia, strong.
1	Piece Sheet Zinc.	4	Ozs. Alcohol.
1	Piece Copper Wire.	2	Ozs. Mercury.
1	Piece Tin Foil.	2	Ozs. Granulated Lead.
1	Chamois Skin.	2	Drs. Carbonate Potash.
1	H. S. Magnet, 3-in.	½	Doz. Charcoals.

Packed in fine wooden carrying case with metal handle..... \$10.00

"Cornwall's Blow Pipe Analysis," extra..... 2.50

The above is a cheap, condensed list of Apparatus and Chemicals for practical work.

"Cornwall's Blow Pipe Analysis" will be found a satisfactory guide in making blow pipe tests.

PROSPECTORS' BLOW PIPE OUTFIT NO. 2.

No. 4020—

1 Dr. Potash Bisulphate, c.p.	1 Plattner's Blow Pipe and Platinum Tip.
1 Dr. Copper Oxide, c.p.	1 Alcohol Lamp.
1 Dr. Copper Sulphate.	1 Oil Lamp (Berzelius).
1 Dr. Calcium Carbonate.	1 Pair Platinum Pointed Forceps.
1 Dr. Oxalic Acid.	1 Pocket Magnifying Lens, double.
1 Dr. Silver Nitrate.	1 Agate Mortar, 1½ in.
1 Piece Silver Foil, c.p.	2 Porcelain Dishes.
1 Piece Tin Foil, c.p.	2 Glass Funnels.
1 Piece Copper Foil, c.p.	1 Doz. Test Tubes.
1 Piece Copper Wire.	1 Doz. Glass Tubes and Rods.
1 Piece Zinc Sheet.	3 Small Beakers.
1 Piece Magnesium Ribbon.	1 Bone Spoon.
1 Spool Iron Wire, pure.	1 Pair Forceps.
2 Books Litmus Paper.	1 Magnet, 3-in.
1 Sheet Turmeric Paper.	1 Hammer.
2 Ozs. Muriatic Acid, c.p., conc.	1 Anvil.
½ Lb. Nitric Acid, c.p., conc.	Platinum Wire and Holder.
2 Ozs. Sulphuric Acid, c.p., conc.	2 Drs. Sodium Carbonate, dry, c. p.
2 Ozs. Ammonia, conc.	2 Drs. Borax Glass.
2 Ozs. Mercury.	2 Drs. Microcosmic Salt, c.p.
½ Lb. Bone Ash.	2 Drs. Lead, Finely Powdered, c.p.
½ Pt. Alcohol.	2 Drs. Lead Flux.
½ Doz. Charcoals.	

Apparatus and chemicals for field work, securely packed in convenient portable case of hard wood..... \$20.00

COMPLETE ASSAY OUTFIT FOR MINE.

No. 4030—

1 Gold Button Balance.	3 Wash Bottles 1000 cc.
1 Silver Button Balance.	6 Reagent Bottles, 8 oz.
1 Analytical Balance.	6 C. H. Pencils, med.
1 Bullion Balance.	1 C. H. Brush ½", round quill.
1 Pulp Balance.	1 C. H. Brush 1", H. R. B.
1 Set Weights, 60 Kgs. down.	1 Test Tube Brush ¾".
1 Set Weights, 1 grm. to 1-10 mg.	2 Buckboard Brushes, 4" No. 566a.
1 Set Weights, 50 grm. to 1 mg.	1 Buckboard Brush No. 568.
1 Set Weights, 1 A. T. to 1-20.	2 Button Brushes.
16 Glass Scale Feet.	4 Burettes, 50 cc. 1-10, G. S.
4 Rubber Balance Covers.	4 Burette Caps.
1 Moisture Scale, 1 kg.	2 Burette Floats.
1 Union Flux Scale.	1 Blast Lamp No. 614.
1 Doz. D. F. C. annealing Cups.	6 Casseroles R. B. No. 2.
1 Annealing Cup Tray.	6 Casseroles R. B. No. 3.
1 Slag Anvil 6x6".	6 Watch Glasses, 3".
1 Sheet Asbestos Board 40x40x¼".	6 Watch Glasses, 3½".
1 Doz. Griffin Beakers No. 1.	1 Button Tray No. 634.
2 Doz. Griffin Beakers No. 2.	1 Test Tube Clamp No. 641.
1 Doz. Griffin Beakers No. 3.	3 Mohr's Pinchcocks, med.
1 Jewelers' Blowpipe No. 467.	2 Hofmann Clamps, med. No. 648.
6 Bottles G. S. 500 cc. No. 509.	3 Doz. Taper Corks, med., assorted.
6 Bottles G. S. 500 cc. No. 512.	2 Doz. R. B. Crucibles No. 00.
2 Dropping Bottles, Schuster's, 1 oz.	6 Spun Iron Crucibles, 1 oz.

1 Case Crusher, large size, power.
 1 Ilver Disc Sample Grinder.
 2 Buckboards 20x24".
 2 Mullers and Handles.
 1 Ilver Cupel Machine 1½" and 1½".
 1 Brass Cupel Mould 1½".
 1 Cupel Tray No. 749.
 1 Cupel Shovel.
 1 Cupel Rake.
 1 Scheibler Desiccator 6" and Plate.
 1 Graduated Cylinder 25 cc.
 1 Graduated Cylinder 100 cc.
 1 Graduated Cylinder 250 cc.
 1 Set Steel Letters ½".
 1 Set Steel Figures ½".
 2 Doz. R. B. Evaporating Dishes, No. 1.
 1 Only R. B. Evaporating Dish No. 6.
 1 Only R. B. Evaporating Dish No. 9.
 2 Triangular Files, 5".
 1 Round File, 6".
 1 Drying Oven 8x10 No. 810 and Support.
 500 Filter Papers No. 597, 11 cm.
 500 Filter Papers No. 3, 18 cm.
 100 Filter Papers, B. and A., double washed, 9 cm.
 1 Doz. Erlenmeyer Flasks, 6 oz.
 1 Doz. Copper Flasks, 8 oz.
 2 R. N. Flasks, 1 liter.
 1 Doz. Parting Flasks, 1 oz.
 1 Volumetric Flask, 1.000 cc. No. 870.
 1 Volumetric Flask 500 cc. No. 870.
 1 Pair Forceps No. 884.
 1 Pair Forceps No. 885.
 1 Pair Forceps No. 886.
 2 Pairs Forceps No. 890, 6".
 1 Doz. Bunsen Funnels, 2¾".
 2 Doz. German Funnel, 4".
 1 Case Furnace No. 14.
 2 Kg. Glass Tubing and Rods.
 1 Pr. Asbestos Mittens.
 1 Steel Gold Pan.
 1 Slag Hammer, 13-16 lbs. No. 1046.
 1 Slag Hammer. 8 oz., No. 1046.
 1 Electric Hot Plate 12"x18".
 1 Gasoline Stove, 2 burners.
 1 Hydrometer for heavy liquids.
 1 Hydrometer for light liquids.
 3 Boxes Gummed Labels.
 2 Alcohol Lamps, brass, 8 oz.
 1 Dangler Lamp.
 1 Lead Measure.
 1 Cupel Mallet, rawhide.
 1 Magnifier, double lens.
 1 Agate Mortar, 3" and Pestle.
 1 Leed's Mortar.
 1 Wedgewood Mortar and Pestle No. 3.
 1 Pouring Mould, 12 hole, No. 1177.
 1 Pouring Mould, heavy, 6 hole, No. 1181a.
 4 D. F. C. Muffles, 10x16.
 1000 Weaver Mailing Envelopes, 2 oz.
 1000 Union Ore Bags, No. 1215.
 3 Percolators, ½ gal.
 2 Pipettes, Vol. 10 cc.
 1 Pipette, Vol. 25 cc.
 1 Pipette, Vol. 50 cc.
 1 Pair Button Pliers, No. 1282.
 1 Pair Cutting Pliers.
 1 "Cover" Respirator.
 6 Roasting Dishes, 6".
 1 Metal Rolls No. 2, No. 1322.
 ½ Lb. Rubber Stoppers, assorted.
 2 Yds. Rubber Sheet, black.
 12 Ft. Pure Gum Tubing, 3-16", med.
 6 Ft. Pure Gum Tubing, ¼", med.
 2 Ft. Pure Gum Tubing, ½", med.
 1 Sampler and Scoop, 12" x 12".
 2 Doz. Tin Sample Pans, 6" dia.
 ½ Doz. Sheet Iron Sample Pans, 6"x9".
 2 Horn Scoops, No. 1358.
 3 Sand Baths, 6".
 1 Bbl. Crucibles, 15 gr.
 1000 Scorifiers, D. F. C., 2½".
 1 Pr. Hand Shears, 9" blade.
 1 Pr. Tinner's Snips, 2½" blade.
 1 Nest D. F. C. Sieves, 8" dia.; Nos. 20-30-40-50-60-80-100-120-150-200.
 2 Spatulas, 4", No. 1387.
 1 Spatula, 6", No. 1387.
 1 Spatula, 8", No. 1387.
 1 Ralston Still.
 1 Kipp H₂S Generator, 1000 cc.
 2 Chaddock's Burette Supports.
 1 Funnel Support for 15 funnels, wooden, No. 1440.
 1 Funnel Support, Wooden, No. 1457.
 1 Test Tube Support for 12, No. 1462.
 2 Doz. Test Tubes 5"x½".
 1 Chemical Thermometer, 250° C., No. 1501.
 1 Pr. Crucible Tongs, nickel-plated, 9".
 1 Pr. Crucible Tongs, steel, 9".
 1 Pr. Scorer Tongs, 36" for 2½" size.
 1 Pr. Scorer Tongs, 36" for 3" size.
 1 Pr. Cupel Tongs, 36", No. 1530.
 6 Pipe Stem Triangles.
 1 Iron Support, 3 rings, No. 1452.
 1 Tripod, 3 rings, No. 1553.
 3 Glass T Tubes, ¼".
 3 Glass Y Tubes, ¼".
 1 Copper Water Bath, 6", No. 1611.
 1 Doz. Watch Glasses, 3½".
 2 Doz. Watch Glasses, 4".
 1 Doz. Watch Glasses, 4½".
 1 Color Plate, 12 cavities.
 1 Set Cork Borers, Nos. 1 to 6.
 2 Pencils for Glass.
 3 Precipitating Jars, 1 qt.
 1 Lb. Sealing Wax.
 50 Duck Ore Bags, 6"x10".
 50 Lbs. Granulated Lead c. p.
 100 Lbs. Litharge, c. p. Pueblo brand.
 1 Keg Soda Bicarbonate.
 50 Lbs. Potash Carbonate.
 50 Lbs. Borax Glass.
 10 Lbs. Argols.
 200 Lbs. Bone Ash.
 5 Lbs. Lead Foil, c. p.
 1 Oz. Silver Foil, c. p.

8 Lbs. Ammonia, c. p.	1 Oz. Lead Sulphate, c. p.
21 Lbs. Nitric Acid, c. p.	$\frac{1}{4}$ Lb. Manganese Sulphate, c. p.
12 Lbs. Hydrochloric Acid, c. p.	$\frac{1}{2}$ Lb. Mercury Bichloride, c. p.
9 Lbs. Sulphuric Acid, c. p.	$\frac{1}{4}$ Lb. Potass. Bichromate, c. p.
1 Lb. Acetic Acid, c. p., 99½%.	$\frac{1}{2}$ Lb. Potass. Carbonate, c. p.
1 Oz. Copper Foil, c. p.	$\frac{1}{2}$ Lb. Potass. Caustic, c. p. by alc.
1 Oz. Iron Wire, c. p.	$\frac{1}{2}$ Lb. Potass. Chlorate, c. p.
2 Books Litmus Paper.	2 Lbs. Potass. Cyanide, Merck, pure.
$\frac{1}{2}$ Lb. Oxalic Acid, c. p.	$\frac{1}{4}$ Lb. Potass. Ferricyanide, c. p.
1 Gal. Alcohol, 96%.	$\frac{1}{2}$ Lb. Potass. Ferrocyanide, c. p.
1 Lb. Tartaric Acid, c. p.	$\frac{1}{4}$ Lb. Potass. Iodide, c. p.
$\frac{1}{2}$ Lb. Tannic Acid, c. p.	1 Lb. Potass. Permanganate, c. p.
$\frac{1}{4}$ Lb. Aluminum Sheet, c. p.	$\frac{1}{2}$ Lb. Reddle.
1 Lb. Ammon. Acetate, c. p.	10 Lbs. Silica Powder.
$\frac{1}{2}$ Lb. Ammon. Carbonate, c. p.	1 Oz. Silver Nitrate, c. p.
1 Lb. Ammon. Chloride, c. p.	$\frac{1}{2}$ Lb. Sodium Carbonate anhyd., c. p.
1 Oz. Ammon. Molybdate, c. p.	$\frac{1}{4}$ Lb. Sodium Caustic, c. p. by alc.
$\frac{1}{2}$ Lb. Ammon. Oxalate, c. p.	$\frac{1}{2}$ Lb. Sodium Hyposulphite, c. p.
$\frac{1}{2}$ Lb. Ammon. Sulphate, c. p.	$\frac{1}{4}$ Lb. Sodium Phosphate, c. p.
1 Lb. Barium Chloride, c. p.	$\frac{1}{2}$ Lb. Tin Granulated, c. p.
1 Lb. Calcium Chloride gran. for desiccator.	$\frac{1}{2}$ Lb. Stannous Chloride, c. p.
$\frac{1}{4}$ Lb. Copper Sulphate, c. p.	1 Oz. Uranium Acetate, c. p.
2 Lbs. Iron Sulphide.	5 Lbs. Zinc Shavings.
1 Lb. Lead Acetate, c. p.	$\frac{1}{2}$ Lb. Zinc Granulated, c. p.
10 Lbs. Lead Acetate, com'l.	$\frac{1}{2}$ Lb. Zinc Oxide, c. p.

We have only intended to itemize here all the articles that go to make up a fairly complete assay equipment, to be used by the prospective purchaser as a memorandum. It may not fit the requirements, but will act in a suggestive way in compiling a list. The price will naturally vary to conform to the different specifications, as it is impossible for us to suggest a list to suit all occasions. Please select your list, giving catalogue numbers, and let us quote you a net price.

ASSAY OUTFIT FOR PROSPECTORS.

No. 4040—

1 Portable Button Balance and Weights.	1 Blow Pipe, Plattner's.
1 Pulp Balance and Weights.	3 Funnels.
1 Furnace ("Burro" or Brown).	1 Pkg. Filter Paper.
or,	1 Button Brush.
1 Case Gasoline Furnace with Blow Pipe Tank.	1 Wash Bottle.
2 Muffles.	6 Parting Flasks.
200 Scorifiers.	1 Tripod.
50 Crucibles.	6 Annealing Cups.
1 Quart Mortar and Pestle (iron).	2 Hammers.
2 Pairs Tongs.	4 Lbs. Litharge.
1 Magnifying Lens.	5 Lbs. Soda-Bicarb.
1 Lead Mould.	1 Lb. Argols.
1 Cupel Mould.	1 Lb. Muriatic Acid, c. p.
1 Magnet.	1 Lb. Nitric Acid, c. p.
3 Pairs Pliers.	10 Lbs. Bone Ash.
1 Spatula.	2 Lbs. Borax Glass.
Glass Rod and Tubes.	$\frac{1}{4}$ Oz. Silver Foil, c. p.
1 Glass Alcohol Lamp.	$\frac{1}{2}$ Lb. Rolled Lead, c. p.
1 Sieve, 60-Mesh.	10 Lbs. Granulated Lead, c. p.
3 Beakers and Covers.	1 Pt. Alcohol.
	2 Lbs. Lead Flux.

The button balance and weights given with this outfit are Cat. No. 226, the Pulp Balance is Cat. No. 271; the Furnace is either the Burro or Brown Furnace, Cat. No. 935 or 938, and left optional with purchaser. Should different balances or furnaces be wanted, or the outfit in any way changed, please submit us revised list for quotation. The above outfit weighs, packed for shipment, 300 lbs. with Burro furnace, or 350 lbs. with Brown. Price complete, packed for shipment, f. o. b. Denver.....\$125.00
Or with one Button Balance and Weights, Catalogue No. 223a, f. o. b. Denver..... 140.00

MEMORANDA OF OUTFIT FOR COPPER ASSAYS BY CYANIDE POTASSIUM METHOD.

No. 4050—

1 Pulp Balance.	1 Dangler Blast Lamp, gasoline.
1 Set Gramme Weights, 50-Gramme to 1 Milligramme.	1 8-Oz. Alcohol Lamp, glass.
2 Pairs Forceps.	½ Lb. Glass Rods and Tubing.
2 Spatulas.	2 Burettes, Glass Stopcock, graduated in 1-10th.
1 ½-Gal. Iron Mortar.	1 Burette Float.
1 80-Mesh Sieve.	1 3-Ring Stand.
1 Doz. Copper Flasks.	2 Funnel Stands, for 4 funnels.
½ Doz. 3½ in. Funnels, Bunsen's.	1 Sampler and Scoop.
½ Doz. Sand Baths.	1 Buckboard and Muller.
1 10 cc. Cylinder.	6 Lbs. Muriatic Acid, com'l.
4 10 cc. Pipettes.	7 Lbs. Nitric Acid, com'l.
1 8-Oz. Graduate.	7 Lbs. Nitric Acid, c. p.
½ Doz. 8-Oz. Beakers.	5 Lbs. Sheet Zinc, cut in strips, com'l.
9 Lbs. Sulphuric Acid, com'l.	1 Color Plate, Porcelain.
8 Lbs. Ammonia Water, strong.	1 H ₂ S Apparatus, small.
1 Lb. Cyanide Potash, Pure.	2 Empty Bottles.
6 Sheets Copper Foil, c. p.	6 Ft. Rubber Tube.
½ Gal. Alcohol.	3 Pinchcocks.
5 Pts. Distilled Water.	1 Box Labels, Blank.
½ Doz. Pkgs. Gray Filter Paper, 7-in.	1 Book Labels, chemical.
½ Doz. Pkgs. S. & S. Filter Paper, 18½ c. m.	2 Books Litmus Paper.
1 Lb. Granulated Zinc, pure.	½ Doz. Casseroles, No. 3.
½ Doz. 12-Oz. Beakers.	

Battery outfits for copper analysis can be furnished as desired.

MULE BACK TRANSPORTATION

When goods have to be transported on mule back, we will pack in cases of suitable size without extra charge.

Chemical Apparatus and Chemicals in Sets

These Sets are compiled with great care, to include the most desirable apparatus, as taught in all the modern school books, avoiding duplications of experiments, and making each as perfect as possible for the cost of the set.

No. 4100—

CHEMICAL SET NO. 1. PRICE \$18.00.

2 Ozs.	Acid Acetic.	1 Oz.	Gun Cotton.
1 Lb.	Acid Hydrochloric.	1 Dr.	Iodine.
1 Lb.	Acid Nitric.	2 Ozs.	Galena.
2 Lbs.	Acid Sulphuric.	1 Oz.	Lead Acetate.
1 Oz.	Acid Oxalic.	¼ Oz.	Lead Carbonate.
½ Oz.	Acid Tartaric.	2 Drs.	Litmus.
2 Ozs.	Ammonium Chloride.	2 Ozs.	Mercury.
4 Ozs.	Ammonium Hydrate.	6 Ins.	Magnesium Ribbon.
1 Oz.	Ammonium Nitrate.	2 Ozs.	Magnesium Sulphate.
1 Oz.	Ammonium Sulphide.	1 Lb.	Manganese Dioxide.
1 Oz.	Animal Charcoal.	1 Ft.	Platinum Wire.
½ Oz.	Antimony.	2 Drs.	Phosphorus.
½ Oz.	Arsenic Trioxide.	1 Dr.	Potassium (metallic).
1 Oz.	Alum.	1 Oz.	Potassium Bichromate.
8 Ozs.	Alcohol Methyl.	2 Ozs.	Potassium Chlorate.
1 Oz.	Barium Chloride.	2 Ozs.	Potassium Ferrocyanide.
1 Oz.	Barium Nitrate.	1 Oz.	Potassium Hydrate.
2 Ozs.	Calcium Carbonate.	1 Oz.	Potassium Nitrate.
2 Ozs.	Calcium Fluoride.	1 Oz.	Strontium Chloride.
4 Ozs.	Calcium Sulphate.	1 Oz.	Strontium Nitrate.
1 Oz.	Carbon Bisulphide.	4 Ozs.	Sulphur.
1 Oz.	Charcoal.	1 Dr.	Silver Nitrate.
2 Ozs.	Copper Sulphate.	1 Dr.	Sodium (metallic).
2 Ozs.	Ether.	1 Oz.	Sodium Biborate.
1 Oz.	Ferrous Sulphide.	1 Oz.	Sodium Carbonate.
2 Ozs.	Ferrous Sulphate.	1 Oz.	Sodium Sulphate.
½ Oz.	Gall Nuts, powdered.	4 Ozs.	Zinc for making Hydrogen.

Beakers (nest of 3).
 Blow Pipe.
 Flasks, 8-ozs., Florence.
 Hessian Crucibles (nest of 4).
 Deflagration Spoon.
 Evaporating Dish, 2 ozs.
 Evolution Flask (fitted for making Hydrogen, Carbonic Acid Gas, etc.).
 Filtering Paper, 4-in. dia.
 File, 4 in.
 Glass Funnel, 2 ozs.
 Graduate, 50 cc.

Chemical Glass Tubing, $\frac{1}{4}$ lb., $\frac{1}{4}$ in.
 Lead Dish.
 Pipette.
 Rubber Tubing.
 Sand Bath.
 Spirit Lamp, 4 ozs.
 Specie Jar for Deflagration, qt.
 Test Tubes.
 Test Tube Holder.
 Test Tube Brush.
 Wedgewood Mortar, $2\frac{3}{4}$ in.
 Glass Retort, 4 ozs.

No. 4110—

CHEMICAL SET NO. 2. PRICE \$30.00.

½ Lb.	Acid Acetic.	2 Ozs.	Lead Monoxide.
1 Lb.	Acid Hydrochloric.	2 Drs.	Litmus (best cubes).
1 Lb.	Acid Nitric.	12 Ins.	Magnesium Ribbon.
1 Oz.	Acid Oxalic.	2 Ozs.	Magnesium Sulphate.
2 Lbs.	Acid Sulphuric.	1 Lb.	Manganese Dioxide.
1 Oz.	Acid Tartaric.	2 Ozs.	Mercury.
1 Oz.	Ammonium Carbonate.	2 Drs.	Mercuric Chloride.
2 Ozs.	Ammonium Chloride.	2 Drs.	Mercuric Oxide.
½ Lb.	Ammonium Hydrate.	12 Ins.	Platinum Wire.
1 Oz.	Ammonium Nitrate.	½ Oz.	Phosphorus.
1 Oz.	Ammonium Sulphide.	½ Dr.	Potassium (metallic).
½ Pt.	Alcohol Methyl.	¼ Lb.	Potassium Bichromate.
2 Ozs.	Alum.	2 Ozs.	Potassium Carbonate.
2 Ozs.	Animal Charcoal.	½ Lb.	Potassium Chlorate.
½ Oz.	Antimony.	1 Oz.	Potassium Chromate.
1 Oz.	Arsenious Anhydride.	½ Oz.	Potassium Cyanide.
1 Oz.	Barium Chloride.	1 Oz.	Potassium Ferricyanide.
1 Oz.	Barium Nitrate.	2 Ozs.	Potassium Ferrocyanide.
1 Oz.	Borax.	1 Oz.	Potassium Hydrate.
½ Lb.	Calcium Carbonate.	1 Dr.	Potassium Iodide.
2 Ozs.	Calcium Chloride.	2 Ozs.	Potassium Nitrate.
2 Ozs.	Calcium Fluoride.	2 Drs.	Potassium Permanganate.
½ Lb.	Calcium Sulphate.	1 Oz.	Potassium Sulphate.
1 Oz.	Carbon Bisulphide.	1 Dr.	Silver Nitrate.
1 Oz.	Cobalt Nitrate.	1 Dr.	Sodium (metallic).
4 Ozs.	Copper Sulphate.	½ Oz.	Sodium Acetate.
2 Ozs.	Ether.	2 Ozs.	Sodium Carbonate.
2 Ozs.	Ferrous Sulphate.	1 Oz.	Sodium Hydrate.
1 Oz.	Ferrous Sulphide.	2 Ozs.	Sodium Hyposulphite.
2 Drs.	Gall Nuts.	2 Ozs.	Sodium Sulphate.
1 Dr.	Gun Cotton.	1 Oz.	Di-Sodium Phosphate.
1 Dr.	Iodine.	1 Oz.	Strontium Chloride.
2 Ozs.	Galena.	1 Oz.	Strontium Nitrate.
1 Oz.	Lead Acetate.	½ Lb.	Sulphur.
2 Ozs.	Lead Carbonate.	½ Lb.	Zinc for making Hydrogen.

Beakers (nest of 4).
 Jewelers' Blow Pipe.
 5 Hessian Crucibles.
 Chemical Flask.
 Deflagration Spoon.
 Evaporating Dish.
 Evolution Flask, fitted with delivery tube complete, for making Hydrogen, Carbolic Acid Gas, etc.
 File.
 Filtering Paper, 4-in. dia.
 2-oz. Funnel.
 8-oz. Funnel.
 Graduate, 50 cc.
 ½ Lb. Assorted Glass Tubing.
 1 Gal. Gas Bag and Stopcock.

Lead Dish for Hydrofluoric Acid.
 Pneumatic Trough, 4 x 7 x 10.
 Pipette.
 Retort, 4-oz. Glass.
 Retort Stand (iron rings).
 Rubber Tubing.
 Sand Bath.
 Scales and Weights, pocket, 6-in. beam.
 Spirit Lamp.
 Specie Jar for Deflagration, 2 qt.
 1 Doz. Test Tubes.
 Test Tube Holder.
 Test Tube Cleaner.
 Wire Gauze, 4 x 4.
 Wedgewood Mortar and Pestle, 3-in.

No. 4120—

CHEMICAL SET NO. 3. PRICE, \$65.00.

1 Lb.	Acid Acetic.	1 Oz.	Litmus (best cubes).
$\frac{1}{2}$ Lb.	Acid Boracic.	2 Ozs.	Logwood.
2 Ozs.	Acid Citric.	12 Ins.	Magnesium Ribbon.
2 Lbs.	Acid Hydrochloric.	2 Ozs.	Magnesium Chloride.
2 Lbs.	Acid Nitric.	1 Lb.	Magnesium Sulphate.
1 Lb.	Acid Oxalic.	2 Lbs.	Manganese Dioxide.
1 Oz.	Acid Phosphoric.	1 Oz.	Mercuric Chloride.
4 Lbs.	Acid Sulphuric.	4 Ozs.	Mercury.
$\frac{1}{2}$ Lb.	Acid Tartaric.	1 Oz.	Microcosmic Salt.
1 Qt.	Alcohol Methyllic.	$\frac{1}{2}$ Lb.	Paraffine.
1 Lb.	Alum, Alumina et Ammoni Sulph.	12 Ins.	Platinum Wire.
1 Pt.	Aqua Ammonia.	1	Platinum Sponge.
$\frac{1}{2}$ Lb.	Ammonium Carbonate.	1 Oz.	Phosphorus.
1 Lb.	Ammonium Chloride.	4 Ozs.	Plumbago.
1 Oz.	Ammonium Molybdate.	1 Dr.	Potassium (metallic).
$\frac{1}{2}$ Lb.	Ammonium Nitrate.	1 Lb.	Potassium Bichromate (red).
1 Oz.	Ammonium Oxalate.	$\frac{1}{2}$ Lb.	Potassium Carbonate.
1 Lb.	Ammonium Sulphate.	1 Lb.	Potassium Chlorate.
2 Ozs.	Ammonium Sulphide.	2 Ozs.	Potassium Chromate (yellow).
$\frac{1}{2}$ Dr.	Aniline.	1 Oz.	Potassium Cyanide.
1 Lb.	Animal Charcoal.	1 Oz.	Potassium Ferricyanide.
1 Oz.	Antimony (metallic).	$\frac{1}{2}$ Lb.	Potassium Ferrocyanide.
2 Ozs.	Antimony Sulphide.	2 Ozs.	Potassium Hydrate (sticks).
$\frac{1}{2}$ Oz.	Arsenicum (metallic).	2 Drs.	Potassium Iodide.
$\frac{1}{4}$ Lb.	Arsenious Anhydride.	$\frac{1}{2}$ Lb.	Potassium Nitrate.
1 Oz.	Asbestos.	1 Oz.	Potassium Permanganate.
2 Ozs.	Barium Carbonate.	4 Ozs.	Potassium Silicate.
$\frac{1}{2}$ Lb.	Barium Chloride.	$\frac{1}{2}$ Lb.	Potassium Sulphate.
$\frac{1}{2}$ Lb.	Barium Nitrate.	2 Drs.	Potassium Sulphocyanide.
1 Lb.	Barium Sulphate.	1 Oz.	Potassium Bitartrate.
$\frac{1}{2}$ Oz.	Bismuth.	1 Dr.	Silver Nitrate.
$\frac{1}{2}$ Lb.	Bone Ash.	2 Drs.	Sodium (metallic).
$\frac{1}{2}$ Lb.	Calcium Carbonate.	1 Oz.	Sodium Acetate.
1 Lb.	Calcium Chloride.	$\frac{1}{2}$ Lb.	Sodium Borate.
1 Lb.	Calcium Fluoride.	1 Oz.	Sodium Bromide.
1 Lb.	Calcium Sulphate.	1 Lb.	Sodium Bicarbonate.
2 Ozs.	Carbon Bisulphide.	2 Lbs.	Sodium Carbonate.
$\frac{1}{2}$ Lb.	Charcoal.	1 Lb.	Sodium Hydrate.
2 Ozs.	Cobalt Chloride.	2 Lbs.	Sodium Hyposulphite.
2 Ozs.	Cobalt Nitrate.	1 Lb.	Sodium Nitrate.
4 Ozs.	Copper Turnings.	$\frac{1}{4}$ Lb.	Sodium Phosphate.
1 Oz.	Copper Nitrate.	1 Lb.	Sodium Silicate.
1 Lb.	Copper Sulphate.	1 Lb.	Sodium Sulphate.
$\frac{1}{4}$ Pt.	Ether.	$\frac{1}{2}$ Lb.	Strontium Carbonate.
2 Ozs.	Ferric Chloride.	$\frac{1}{4}$ Lb.	Strontium Chloride.
1 Lb.	Ferrous Sulphate.	$\frac{1}{2}$ Lb.	Strontium Nitrate.
$\frac{1}{4}$ Lb.	Ferrous Sulphide.	2 Ozs.	Di-Sodium Phosphate.
1 Oz.	Gall Nuts.	2 Lbs.	Sulphur.
1 Dr.	Gun Cotton.	$\frac{1}{4}$ Lb.	Tin (metallic).
1 Oz.	Indigo.	1 Oz.	Tin Protochloride.
$\frac{1}{4}$ Lb.	Iron Filings.	1 Pt.	Turpentine.
2 Ozs.	Galena.	1 Lb.	Zinc, Mossy, for making Hydrogen.
$\frac{1}{4}$ Lb.	Lead Acetate.	1 Lb.	Zinc Carbonate.
1 Lb.	Lead Carbonate.	$\frac{1}{4}$ Lb.	Zinc Oxide.
$\frac{1}{4}$ Lb.	Lead Nitrate.	1 Lb.	Zinc Sulphate.
1 Lb.	Lead Protoxide.		

CHEMICAL SET NO. 3—Continued.

Alcohol Lamp.	1-gal. Gas Bag with Brass Stopcock.
1 Lb. Assorted Glass Tubing.	Hydrometer for taking specific gravity.
2 Doz. Assorted Test Tubes.	Jar for Hydrometer.
2 Doz. Assorted Corks.	Lead Dish for Hydrofluoric Acid.
Nest of 3 Beakers, 3 to 16 oz.	Pipette.
Brass Blow Pipe.	Pneumatic Trough, 4 x 7 x 10.
Set of 3 Brass Cork Borers.	1 Pt. Retort.
Corkscrew.	Receiver for Retort.
2 Nests of 5 Hessian Crucibles.	Iron Retort Stand.
1 Pair Crucible Tongs.	Rubber Tubing for Gas Connection.
1 Pt. Chemical Flask.	Reduction Tube for reducing Metallic Oxide.
2 4-oz. Chemical Flasks.	Polished Steel Spatula.
Chemical Thermometer.	3 Glass Stirring Rods.
Balance and Weights.	Sand Bath.
Brass Deflagrating Spoon.	2 Specie Jars for Collecting Gases and for Deflagration.
1 2-oz. Evaporating Dish.	Test Glass.
1 6-oz. Evaporating Dish.	Test Tube Rack.
Evolution Flask with Funnel and Delivery Tubes for making Hydrogen, etc.	Test Tube Holder.
Triangular File.	Test Tube Cleaner.
Round File.	Watch Spring for Burning in Oxygen.
1 Pkg. of 100 Cut Filters.	2 Safety Tubes, Thistle Top.
1 Pt. Glass Funnel.	Iron Wire Gauze.
1 4-oz. Glass Funnel.	Woulff Bottle with 3 necks, pt.
Metric Graduate Glass, 100 cc.	4-in. Wedgewood Mortar and Pestle.
1 Set (24) Reagent Bottles.	

Collection of Minerals and Crystal Models

No.			
4200	Blow Pipe Collection.		
	25 specimens, in hardwood case	\$1.00	
	50 specimens, in hardwood case	2.00	
	100 specimens, in hardwood case	5.00	
	200 specimens, in hardwood case	10.00	
4210	Scale of Fusibility.		
	(a) 1, Stibnite; 2, Natrolite; 3, Almandite; 4, Actinolite; 5, Orthoclase; 6, Bronzite. In improved pasteboard trays	1.50	
	(b) Large specimens, mounted on black walnut blocks	3.50	
4220	Scale of Hardness.		
	(a) 1, Talc; 2, Gypsum; 3, Calcite; 4, Fluorite; 5, Apatite; 6, Orthoclase; 7, Quartz; 8, Topaz; 9, Corundum; 10, Diamond. With streak plate and file. Improved trays	7.00	
	(b) Same, but smaller specimens, in hardwood case	2.50	
	(c) Same as foregoing, without diamond	1.25	
4230	Specific Gravity.		
	25 specimens, in neat hardwood case	9.00	
4240	Structure and Form, results of imperfect crystallization.		
	1, Columnar; 2, Fibrous; 3, Radiated; 4, Reticulated; 5, Lamellar; 6, Coarse Granular; 7, Fine Granular; 8, Compact; 9, Botryoidal; 10, Mammillary; 11, Stalactitic; 12, Coralloidal; 13, Concretionary; 14, Capillary; 15, Acicular; 16, Amorphous. In pasteboard trays	7.00	
	Large specimens, mounted on black walnut blocks	14.00	
4250	Cleavage.		
	1, Cubic; 2, Octahedral; 3, Rhombohedral; 4, Basal; 5, Prismatic. Large specimens, mounted on black walnut blocks	1.50	
1460	Fracture.		
	1, Even; 2, Uneven; 3, Conchoidal; 4, Sub-Conchoidal; 5, Splintery; 6, Hackly. Large specimens, mounted on black walnut blocks	3.50	

THE DENVER FIRE CLAY COMPANY.

No.			
4270	Tenacity.		
	1, Brittle; 2, Sectile; 3, Malleable; 4, Flexible; 5, Elastic. Large specimens, mounted on black walnut blocks	\$3.00	
4280	Luster.		
	(a) Kinds of Luster: 1, Metallic; 2, Sub-Metallic; 3, Adamantine; 4, Vitreous; 5, Sub-Vitreous; 6, Resinous; 7, Greasy; 8, Pearly; 9, Metallic-Pearly or Metalloid; 10, Silky; 11, Dull, without luster. (b) Degrees of Intensity of Luster: 12, Splendent; 13, Shining; 14, Glistening; 15, Glimmering. Large specimens, mounted on black walnut blocks	9.00	
	(b) Same, but specimens smaller and in improved pasteboard trays.	4.50	
4290	Color.		
	(a) 25 of the most important specimens mounted on black walnut blocks	13.50	
	(b) 56 large specimens, illustrating the metallic and non-metallic colors, mounted on black walnut blocks	30.00	
	(c) Same as foregoing, but smaller specimens and in improved pasteboard trays	16.00	
4300	Diaphaneity.		
	1. Transparent; 2, Semi-Transparent; 3, Translucent; 4, Sub-Translucent; 5, Opaque. Large specimens, mounted on black walnut blocks	3.00	
4310	Ores and Metallic Minerals.		
	25 specimens, only the common metals, averaging $\frac{3}{4} \times \frac{3}{4}$ in., in case	1.25	
	25 specimens, larger size, printed labels, in improved pasteboard trays	3.00	
	50 specimens, illustrating ores of both the common and rare metals, in improved pasteboard trays	12.00	
4320	Ores of the Rarer Metals.		
	15 specimens	4.00	
	25 specimens	8.50	
4330	Gold and Silver Ores.		
	15 specimens	12.00	
4340	Copper Ores.		
	15 specimens	3.00	
	25 specimens	7.00	
4350	Iron Ores and Minerals.		
	25 specimens	2.50	
	50 specimens	8.50	
4360	Lead Ores and Minerals.		
	15 specimens	4.00	
	25 specimens	12.00	
4370	Zinc Ores and Minerals.		
	15 specimens	4.00	
4400	Crystal Models, of Celluloid.		
	A new and most excellent invention is this set of six crystal models. They are made of transparent celluloid and average 4 inches longest diameter. They exhibit the six different systems of crystallization, and show various derivative forms by means of internal crystals, also of celluloid. The axes of the crystals are shown by various colored silk threads, the same axis by the same color, different axes by different colors. Set of six in well made case	16.00	
4410	Crystal Models, of Hard Wood.		
	108 models, with reference list, in box	30.00	
4420	Crystal Models, of Glass.		
	21 cut glass models, showing the crystallographic forms and natural colors of uncut gems, in case	18.00	
4430	Crystal Models, in Plaster.		
	100 white models	20.00	
	50 colored faced models, mounted in brass holders and again on hard-wood blocks, label giving name of minerals and crystallographic formula	20.00	
	100 colored faced models	35.00	
	200 colored faced models	75.00	

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All books are net at catalogue price, post paid, to any address, except in a few instances, where postage extra is mentioned.

ASSAYING.

AARON (C. H.), <i>Assaying</i> . Part I, Gold and Silver Ores; 6th edition, 1906.....	\$1.00
Part II, Gold and Silver Bullion; Part III, Lead, Copper, Tin, Mercury, etc. (Part II and III in one volume); 4th edition, 1906	1.50
ARGALL (P. H.), <i>Mill and Smelter Methods of Analysis</i> ; 3rd edition, 1908.....	2.00
AUSTIN (L. S.), <i>Fire Assay of Gold, Silver and Lead</i> ; 1907	1.00
BAILAR, <i>Laboratory Notes</i>	1.00
BERINGER (C. and J. J.), <i>A Text Book of Assaying</i> . With numerous diagrams and index; 11th edition, 456 pages, cloth; 1906	3.00
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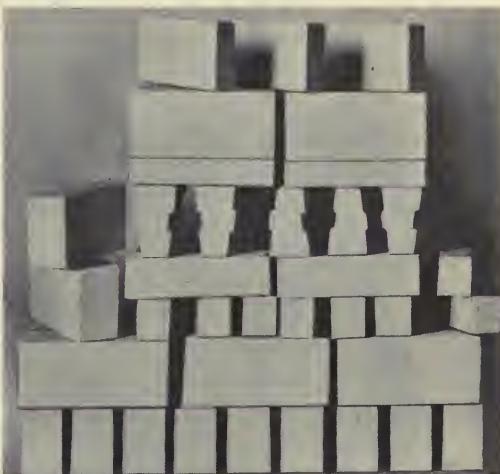
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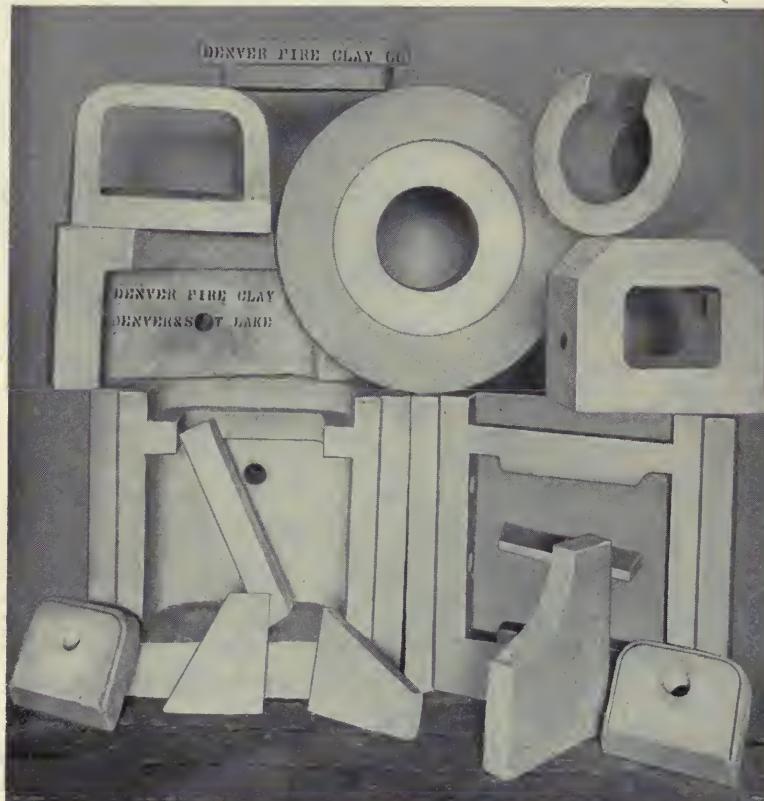
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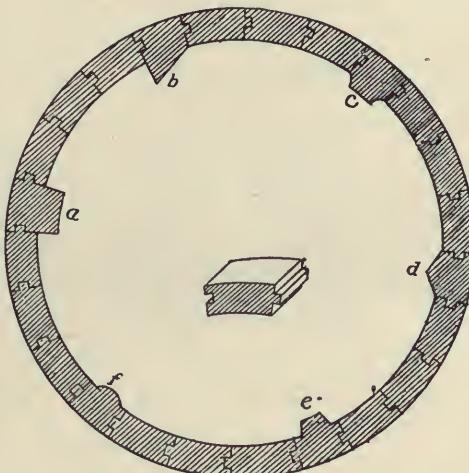
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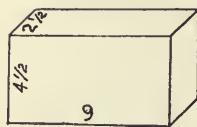


Sectional View of Lining.

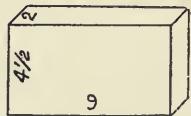
We manufacture the above Cylinder Lining from 4 to 5 inches thick. The projecting bricks are usually made like "a" in cut, but may be made like "b," "c," "d," "e" or "f" if preferred. In ores which are inclined to matte in roasting, the smaller projections are preferable, but with an ore that will free itself the larger projections serve to carry the ore upward, allowing it to drop through the heated space of the cylinder, thus utilizing the heat to the greatest advantage. As this lining is tongued and grooved, it can be made much thinner than the other lining. We have many of these linings in use, and are pleased to say they have given excellent satisfaction.

On receipt of specifications estimates will be promptly given.

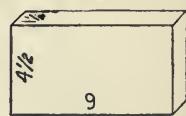
Regular 9-inch Fire Brick



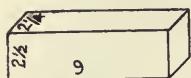
1—Standard.



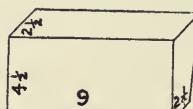
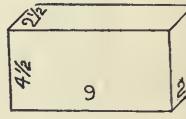
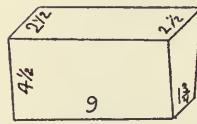
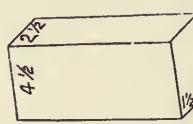
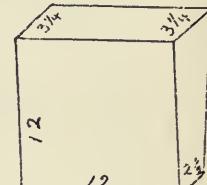
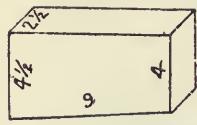
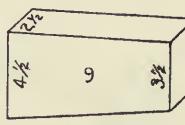
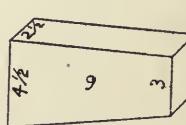
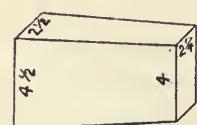
2—Special Square.



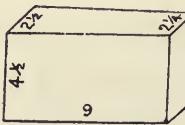
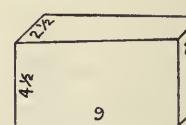
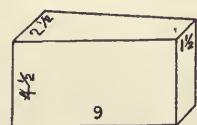
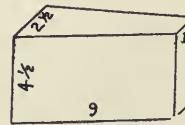
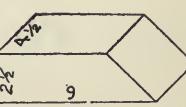
3—Split.



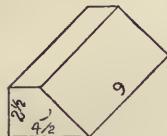
4—Soap.

4 1/2—Arch.
80 in. Diameter Inside.
111 Brick to Circle.5—Arch.
36 in. Diameter Inside.
54 Brick to Circle.6—Arch.
21 in. Diameter Inside.
36 Brick to Circle.7—Arch.
13 in. Diameter Inside.
26 Brick to Circle.12—Arch.
For Lime Kilns.13—Key or Ringwall.
12 ft. Diameter Inside.
112 Brick to Circle.14—Key.
5 ft. Diameter Inside.
52 Brick to Circle.15—Key.
3 ft. Diameter Inside.
36 Brick to Circle.

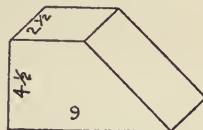
16—Dome.

17—Wedge.
15 ft. Diameter Inside.18—Wedge.
6 ft. Diameter Inside.
105 Brick to Circle.19—Wedge.
27 in. Diameter Inside.
53 Brick to Circle.20—Wedge.
12 in. Diameter Inside.
36 Brick to Circle.21—End Skew.
Any Angle to Order.

REGULAR 9-INCH FIRE BRICK—Continued.



22—Side Skew.
Any Angle to Order.



23—Edge Skew.
Any Angle to Order.

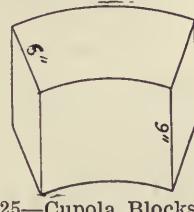


24—Jamb.

Prices of Square and Shape Fire Brick and Clay

(Carload lots, f. o. b. Denver.)

No. 1 Pressed Fire Brick, per 1000	\$23.00
Shape Brick, not exceeding 9 x 4 1/2 x 2 1/2 inches, per 1000	25.00
Ground Fire Clay, in 100-pound sacks, per ton	5.50



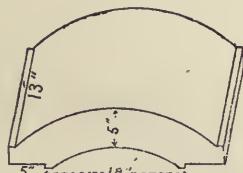
25—Cupola Blocks.

CUPOLA BLOCKS

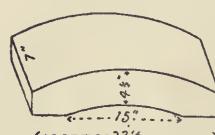
Outside Diameter of Lining	Thickness	Number to Circle	Weight Per Block
30 inches	4 1/2 inches	11	20 1/2 pounds
36 inches	4 1/2 inches	12	21 pounds
40 inches	5 inches	14	22 pounds
42 inches	4 1/2 inches	15	22 pounds
48 inches	5 inches	17	24 pounds
54 inches	6 inches	18	29 pounds
60 inches	5 inches	21	24 pounds

We carry in stock above sizes. Any other size or shape made to order.

TILE

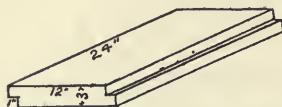


26—Arch Tile
For the top of Fire Boxes.
Used for Bake Ovens
Price, \$1.15.

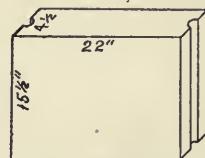


27—Arch Tile
For the Top of Fire Boxes.
Price, 50 cents.

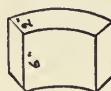
TILE—Continued.



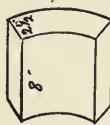
28—Flange or Rabbeted Tile.
12 x 24 x 2½ in.
12 x 24 x 3 in.
Any Other Size to Order.



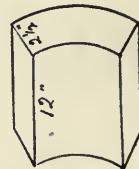
29—Damper or Door Tile.
To be bound with iron in the groove.
Any Size to Order.



30—Candy and Brass
Furnace Linings.
Inside Diameter 14 in.
Outside Diameter 18 in.
6 to Circle.
Each, 10 cents.



31—Candy and Brass
Furnace Linings.
Inside Diameter 16 in.
Outside Diameter 21 in.
6 to Circle.
Each, 15 cents.

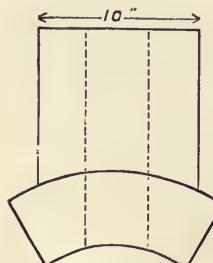


31a—Candy and Brass
Furnace Linings.
Inside Diameter 19 in.
Outside Diameter 24 in.
6 to Circle.
Each, 25 cents.

32—Refining or Brass
Furnace.
Inside Diameter 16 in.
Outside Diameter 24 in.
6 Bricks to Circle—
18 to 1 Furnace.

32a—Refining or Brass
Furnace.
Inside Diameter 18 in.
Outside Diameter 25 in.
6 Bricks to Circle—
18 to 1 Furnace.

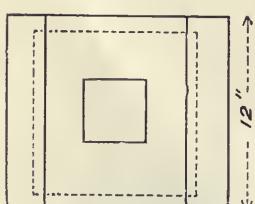
32b—Refining or Brass
Furnace.
Inside Diameter 18 in.
Outside Diameter 28 in.
6 Bricks to Circle—
18 to 1 Furnace.



One in 18 to be Flue Tile, No. 32, 32a and 32b.
Lining complete with throat piece:

$3\frac{1}{2}$	4	5 inches thick.
\$6.50	7.00	9.00

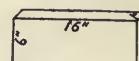
32c Flue or Throat Tile, for Refining or Brass Furnaces, No. 32, 32a, 32b.....Each, net \$1.50



No. 32c

33—Cylinder Stove Linings. 34—Plain Stove-Back Tile,
1 in. Thick.
Outside Diameters 9, 10, 11,
12 and 13 in.
5 to Circle—15 to Set.
Price, 5c each, or 50c per set.

Sizes 1 x 5 x 16 in.
1 x 6 x 16 in.
1 x 7 x 18 in.
Price, 15 cents each.



List of Rectangular Tile in Stock

Thickness Inches	Width Inches	Length Inches	Weight Pounds	Thickness Inches	Width Inches	Length Inches	Weight Pounds	Thickness Inches	Width Inches	Length Inches	Weight Pounds
1	5	16	5	2	14	24	44	3	8	22	34
1	6	16	6	2	16	16	34	3	8	24	37
1	6	18	7	2	16	18	38	3	10	18	36
1	6	20	8	2	16	22	47	3	10	20	39
1	7	18	8	2	16	24	51	3	10	22	43
1	7	20	9	2	18	18	43	3	10	24	47
1	8	20	10	2	18	24	59	3	12	18	42
1½	6	16	10	2½	4½	18	13	3	12	20	47
1½	6	18	11	2½	4½	24	18	3	12	22	51
1½	6	20	12	2½	4½	28	21	3	12	24	56
1½	6	22	13	2½	6	18	17	3	12	30	71
1½	6	24	15	2½	6	22	22	3	12	36	84
1½	7	16	12	2½	6	24	23	3	14	18	48
1½	7	18	13	2½	7	18	20	3	14	20	53
1½	7	20	15	2½	7	20	23	3	14	22	58
1½	7	22	16	2½	7	22	25	3	14	24	63
1½	7	24	18	2½	7	24	27	3	14	30	80
1½	8	16	13	2½	8	18	24	3	14	36	99
1½	8	18	15	2½	8	20	26	3	16	24	72
1½	8	20	17	2½	8	22	28	3	16	36	112
1½	8	22	19	2½	8	24	30	3	18	18	63
1½	8	24	21	2½	10	18	29	3	18	22	79
1½	10	16	16	2½	10	22	36	3	18	24	86
1½	10	18	18	2½	10	24	38	3	18	36	130
1½	10	20	20	2½	12	12	23	3	24	24	112
1½	10	22	22	2½	12	14	27	4	8	18	37
1½	10	24	24	2½	12	18	31	4	8	20	41
1½	12	24	29	2½	12	22	43	4	8	22	45
2	4½	24	14	2½	12	24	46	4	8	24	50
2	6	18	14	2½	12	30	56	4	10	18	47
2	6	20	16	2½	14	14	31	4	10	20	52
2	6	22	17	2½	14	16	41	4	10	22	56
2	6	24	19	2½	14	18	44	4	10	24	61
2	7	18	17	2½	14	20	47	4	10	30	78
2	7	20	18	2½	14	30	64	4	12	18	56
2	7	22	20	2½	16	16	40	4	12	20	63
2	7	24	22	2½	16	18	46	4	12	22	68
2	8	16	16	2½	16	22	57	4	12	24	77
2	8	18	19	2½	16	24	62	4	12	30	93
2	8	20	21	2½	18	18	53	4	12	36	112
2	8	22	23	2½	18	22	65	4	14	18	65
2	8	24	25	2½	18	24	71	4	14	20	73
2	10	18	25	2½	22	24	87	4	14	22	80
2	10	20	27	2½	24	24	92	4	14	24	87
2	10	22	30	3	4½	20	17	4	14	30	109
2	10	24	33	3	4½	22	20	4	14	36	130
2	12	12	19	3	4½	24	22	5	9	9	26
2	12	14	23	3	4½	28	25				
2	12	16	25	3	4½	30	26				
2	12	18	29	3	4½	36	33				
2	12	20	32	3	8	18	28				
2	12	22	35	3	8	20	31				
2	12	24	38								
2	14	18	33								

Tiles of 1 inch thickness, 2 cents per pound; 1½ inches, 1½ cents per pound; other sizes, 1 cent per pound. Ask for special quotations for large quantities.

We shall be pleased to make any other size to order.

PART V.

POTASSIUM CYANIDE AND ZINC SHAVINGS

The Cyanide Process for the recovery of the precious metals having come into such general use, we have made extensive preparations for satisfactory service in the delivery of Potassium and Sodium Cyanide and Zinc Dust and Shavings, and are in a position to quote prices that we feel sure will be attractive to the trade. We are agents for the Roessler & Hasslacher Cyanide and Zinc Dust, and are one of the largest, if not the largest, distributors in the West. The purity of the Roessler & Hasslacher products is too well known to require comment here.

Our Zinc Shavings are made from the purest of zinc on a Johnson Water Cooled Lathe, and have met with such favor that our business in this line has grown very rapidly, enabling us to cut and sell in sufficient quantities to reduce the price to the minimum. They have become the standard of excellence because we have made it our business to meet every requirement the thread should answer to give the greatest efficiency as a precipitating agent, and have conformed as nearly as possible to these requirements.

We are prepared to contract for any quantity, delivery to be made in lots at stated intervals, enabling the consumer to receive shavings freshly cut and free from oxidation at all times, a matter of great importance in the precipitation of the precious metals by this method. We court inquiry and investigation of these Shavings. They are made by experts in an expert way, and we know they are right.

Prices Current of Chemicals and Reagents

Kept in Stock and for Sale by

THE DENVER FIRE CLAY COMPANY

Denver, Colorado, U. S. A.

N. B.—Prices subject to market variations. For quantities less than a quarter pound the ounce price will be charged. Merck's, Baker & Adamson's, J. T. Baker's and Mallinckrodt's chemicals in stock.

Cost of BOTTLES and other containers INCLUDED, unless otherwise stated.

	Pound.	Ounce.
Acetamide	\$ 4.00	\$0.40
Acetanilid .....	.50	.10
Acetone .....	.50	
Acetone, highest purity.....	.80	.15
Acetyl Bromide .....		.80
Acetyl Chloride .....		.30
Acetyl Iodide		1.00
Acid Acetic, com'l, No. 8, 30%.....	Bottle, \$0.09	.10
Acid Acetic, pure, 30%.....	Bottle .09	.15
Acid Acetic, pure, 60%.....	Bottle .09	.20
Acid Acetic, glacial, 80%	Bottle .09	.25
Acid Acetic, chem. pure, 99½%.....	Bottle .09	.35
Acid Acetic, anhydrous.....		1.80
Acid Antimonic (Antimony pentoxide) c. p.....		1.10
Acid Antimonious (Antimony trioxide) c. p.....		.20
Acid Arsenicic, chem. pure.....		.85
Acid Arsenious, com'l, powder (Arsenic trioxide).....		.15
Acid Arsenious, pure, lumps.....		.40
Acid Arsenious, pure, powder.....		.40
Acid Arsenious, chem. pure.....		.15
Acid Asparaginic		3.00

Containers Included Unless Otherwise Specified.

	Pound.	Ounce.
Acid Benzoic, from gum benzoin, subl.....	\$ 1.50	\$ 0.20
Acid Benzoic, from toluene .....	.70	.10
Acid Boric, com'l, cryst.....	.25	.10
Acid Boric, com'l, powder.....	.25	.10
Acid Boric, cryst., chem. pure	Carton .35	.10
Acid Boric, powder, chem. pure	Carton .35	.10
Acid Boric, fused, chem. pure.....	1.50	.20
Acid Boro-Wolframic (boro-tungstic), sp. g. 2.6.....		1.50
Acid Bromic, sp. g. 1.120.....	3.50	.35
Acid Carbolic, crude, 50%.....Can, \$0.15; gal., \$0.60		
Acid Carbolic, white, cryst., pure.....	.40	
Acid Carbolic, loose, cryst., chem. pure.....	.75	.20
Acid Carbonic, liquefied, in steel cylinders of 18 pounds.....	.25	
Acid Carminic, chem. pure.....		3.50
Acid Catechic, pure .....		.80
Acid Chloric, 1.12 sp. gr.....		.30
Acid Chloroplatinic.....Gram., \$0.80		
Acid Chromic, com'l, for batteries	Bottle, .15	.40
Acid Chromic, pure, cryst.....	Bottle, .15	.70
Acid Chromic, chem. pure, cryst., free from H ₂ SO ₄	Bottle, .15	1.60
Acid Citric, cryst., purified.....	.70	.10
Acid, Citric, cryst., chem. pure		1.20
Acid Formic, pure, 1.06 (25%).....Bottle, \$0.15		.60
Acid Formic, pure, 1.12 (50%).....Bottle, .15		.70
Acid Formic, pure, 1.20 (90%).....Bottle, .15		1.25
Acid Gallic, cryst., pure.....	.90	.15
Acid Hydrobromic, sp. g. 1.20, chem. pure.....Bottle, \$0.15		1.00
Acid Hydrobromic, sp. g. 1.49, chem. pure.....Bottle, .15		2.00
Acid Hydrobromic, sp. g. 1.78, chem. pure.....Bottle, .15		5.00
Acid Hydrobromic, diluted, sp. g. 1.077, U. S. P.....Bottle, .10		.35
Acid Hydrochloric, com'l, 22° B., in 1-lb. bottles.....Bottle, .15		.10
Acid Hydrochloric, com'l, 22° B., in 6-lb. bottles.....Bottle, .25		.06
Acid Hydrochloric, com'l, 22° B., in carboys.....Carboy, 2.00		.03
Acid Hydrochloric, strictly chem. pure, sp. g. 1.20, free from As, Cl, Fe and S., in 1-lb. bottles.....incl.		.35
Acid Hydrochloric, strictly chem. pure, sp. g. 1.20, free from As, Cl, Fe and S., in 6-lb. bottles.....incl.		.20
Acid Hydrochloric, strictly chem. pure, sp. g. 1.20, free from As, Cl, Fe and S., in carboys.....incl.		.12
Acid Hydrocyanic, diluted, U. S. P.—2%.....	.60	.15
Acid Hydrofluoric, chem. pure, B. & A.'s, in 1-lb. Ceresine bottles...incl.	1.50	.25
Acid Hydrofluoric, chem. pure, B. & A.'s, in ½-lb. Ceresine bottles...incl.	1.60	

Containers Included Unless Otherwise Specified.

	Pound.	Ounce.
Acid Hydrofluoric, chem. pure, B. & A.'s, in $\frac{1}{4}$ -lb. Ceresine bottles...incl.	\$2.00	
Acid Hydrofluoric, com'l, B. & A.'s, in 1-lb. Ceresine bottles.....incl.	.80	\$0.15
Acid Hydrofluoric, com'l, B. & A.'s, in $\frac{1}{2}$ -lb. Ceresine bottles.....	1.00	
Acid Hydrofluoric, com'l, B. & A.'s, in $\frac{1}{4}$ -lb. Ceresine bottles.....	1.40	
Acid Hydrofluorsilicic, com'l, 1.16 sp. gr.	Bottle, \$0.15	.50
Acid Hydrofluorsilicic, chem. pure.....	Bottle, .15	2.00
Acid Hydroiodic, 1.50 sp. gr.....		.50
Acid Hydroiodic, 15%	Bottle, \$0.15	1.00
Acid Hypophosphorus, 30%.....		1.20
Acid Iodic, cryst.....		.90
Acid Iodic, anhydrous.....		1.20
Acid Lactic, conc., pure.....	1.00	.15
Acid Malic		1.00
Acid Malonic .....		.80
Acid Meconic		1.75
Acid Molybdic, chem. pure, free from ammonia.....	3.50	.40
Acid Molybdic, pure, 85%.....	2.00	.25
Acid Monobromacetic .....		.75
Acid Monochloracetic, pure.....	2.00	.25
Acid Mucic .....		.50
Acid Muriatic. (See Acid Hydrochloric.)		
Acid Nitric, com'l, 38° Be, in 1-lb. bottles.....	Bottle, \$0.15	.15
Acid Nitric, com'l, 38° Be, in 7-lb. bottles.....	Bottle, .25	.12
Acid Nitric, com'l, 38° Be, in carboys.....	Carboy, 2.00	.10
Acid Nitric, strictly chem. pure, sp. g. 1.42, free from As, Fe, Cl, and S, in 1-lb. bottles.....	....incl.	.35
Acid Nitric, strictly chem. pure, sp. g. 1.42, free from As, Fe, Cl, and S, in 7-lb. bottles.....	....incl.	.20
Acid Nitric, strictly chem. pure, sp. g. 1.42, free from As, Fe, Cl, and S, in carboys .....	.... incl.	.14
Acid Nitric, fuming, com'l, 1.60.....	Bottle, \$0.15	.60
Acid Nitric, fuming, chem. pure, sp. g. 1.60.....	Bottle, .15	.80
Acid Oleic (oleinic), com'l.....	Bottle, .09	.25
Acid Oleic (oleinic), pure.....		.60
Acid Oleic (oleinic), chem. pure.....		.50
Acid Osmic, cryst.....	1-gramme vial, \$3.00	
Acid Oxalic, com'l.....		.15
Acid Oxalic, chem. pure.....	....Carton	.45
Acid Palmitic, pure.....		.60
Acid Perchloric, pure.....		5.00
Acid Phospho-Antimonic, 10% solution.....		.30

Containers Included Unless Otherwise Specified.

	Pound.	Ounce.
Acid Phospho-Molybdic, cryst.....		\$1.20
Acid Phospho-Molybdic, 10% solution.....	\$1.25	.25
Acid Phospho-Tungstic (phospho-wolframic), cryst.....	4.00	.45
Acid Phospho-Tungstic (phospho-wolframic), 10% solution.....	2.00	.25
Acid Phosphoric, anhydrous (P_2O_5).....	Bottle, \$0.20	1.25
Acid Phosphoric, glacial, in sticks (meta-)		.80
Acid Phosphoric, syrupy, 85% (ortho-)	Bottle, \$0.15	.50
Acid Phosphoric, diluted, 10%	Bottle, .09	.20
Acid Phosphoric, diluted, 50%	Bottle, .09	.35
Acid Phosphorus, sp. g. 1.120	2.00	.30
Acid Phtalic, anhydrous, subl.....		.25
Acid Phtalic, cryst., chem. pure.....		.35
Acid Pieric (carbazotic), pure.....	1.00	.20
Acid Pieric (carbazotic), com'l.....	.55	.10
Acid Propionic, pure.....		.65
Acid Prussic. (See Acid Hydrocyanic.)		
Acid Pyrogallic, resublimed, Mallinckrodt's, 1-lb. tins.....	2.50	.30
Acid Pyrogallic, resublimed, Mallinckrodt's, $\frac{1}{2}$ -lb. tins.....	2.70	
Acid Pyrogallic, resublimed, Mallinckrodt's, $\frac{1}{4}$ -lb. tins.....	3.00	
Acid Pyroligneous, rectified.....		.40
Acid Pyrophosphoric .....		.35
Acid Rosolic	2.00	.30
Acid Salicylic	Carton	.60
Acid Salicylous .....		.60
Acid Selenic, sp. g. 1.40	$\frac{1}{8}$ oz., \$0.60	4.00
Acid Selenous, subl.....	$\frac{1}{8}$ oz., 1.00	
Acid Silicic, precip.....		.60
Acid Silicic, chem. pure .....		.90
Acid Silicic, com'l .....		.10
Acid Stearic, com'l.....		.30
Acid Stearic, chem. pure.....		.50
Acid Stibic, chem. pure		1.10
Acid Stibious, chem. pure		1.10
Acid Succinic, crude.....		.60
Acid Succinic, pure.....		.75
Acid Sulphanilic, white cryst.....	2.00	.25
Acid Sulpho-salicylic .....		.40
Acid Sulphuric, com'l, 66° B., in 1-lb. bottles.....	Bottle, \$0.15	.10
Acid Sulphuric, com'l, 66° B., in 9-lb. bottles.....	Bottle,	.25
Acid Sulphuric, com'l, 66° B., in carboys	Carboy, 2.00	.03
Acid Sulphuric, com'l, 66° B., in drums of 1,600 lbs. (drum, \$8.00).....		.02

Containers Included Unless Otherwise Specified.

	Pound.	Ounce.
Acid Sulphuric, strictly chem. pure, sp. g. 1.845, free from As, N, SO ₂ and organic matter, in 1-lb. bottles.....	incl. \$0.35	
Acid Sulphuric, strictly chem. pure, sp. g. 1.845, free from As, N, SO ₂ and organic matter, in 9-lb. bottles.....	incl. .18	
Acid Sulphuric, strictly chem. pure, sp. g. 1.845, free from As, N, SO ₂ and organic matter, in carboys.....	incl. .12	
Acid Sulphuric, anhydr.....	2.00	
Acid Sulphuric, anhydrous, in sealed glass bulbs of about 100 grammes..	.50	
Acid Sulphuric, fuming, Nordhausen.....	Bottle, \$0.15	.35
Acid Sulphurous, U. S. P.....	Bottle, .15	.20
Acid Sulphurous, chem. pure, B. & A.'s.....	Bottle, .15	.25
Acid Tannic (Tannin).....	Carton 1.00	\$0.15
Acid Tannic, chem. pure.....	Carton 1.80	.20
Acid Tartaric, cryst.....	.50	
Acid Tartaric, powder.....	.55	
Acid Tartaric, chem. pure, cryst.....	.90	.15
Acid Tartaric, chem. pure, powder.....	1.00	.15
Acid Telluric	Grm., \$1.50	35.00
Acid Titanic .....		.70
Acid Trichloracetic	3.50	.35
Acid Tungstic (wolframic), technical.....	1.50	.20
Acid Tungstic (wolframic), chem. pure.....		.40
Acid Uranic, pure.....		.75
Acid Uric, pure.....		.80
Acid Vanadic, chem. pure.....	1/8 oz., \$0.45	3.00
Acid Vanadic, technical.....		1.50
Acid Wolframic. (See Acid Tungstic.)		
Agar Agar, in shreds.....	1.00	
Agar Agar, in powder.....	1.50	
Albumen, from blood, chem. pure.....		.45
Albumen, from eggs, soluble, impalpable powder	1.60	.20
Alcannin .....		.50
Alcohol, 95%..... Container extra.....	Pint, \$0.50	
Alcohol, 95%..... Container extra.....	Quart, .90	
Alcohol, 95%..... Container extra.....	Gal., 3.20	
Alcohol Absolute	Pint, .80	
Alcohol Absolute.....	Quart, 1.50	
Alcohol Absolute	Gal., 5.75	
Alcohol Amylic, com'l (fusel oil).....	Gal., 2.50	
Alcohol Amylic, chem. pure.....		1.00
Alcohol Methyl (wood alcohol), 95%.....Container extra.....	Gal., .80	
Alcohol Methyl (wood alcohol), absolute. Container extra.....	Gal., 1.25	
Alcohol Methyl (wood alcohol), deodcrized (Columbian Spirits), Gal.,	1.20	

Containers Included Unless Otherwise Specified.

	Pound.	Ounce.
Aluminum Tartrate, chem. pure.....	\$2.50	\$0.35
Aluminum and Sodium Chloride, chem. pure.....	.60	.25
Amalgams. (See their respective metals.)		
Ammonia Water. (See Ammonium Hydrate.)		
Ammonium Acetate, cryst., chem. pure.....	.80	.15
Ammonium Arsenate, chem. pure.....	1.50	.25
Ammonium Arsenite, chem. pure.....	1.40	.25
Ammonium Bicarbonate, chem. pure.....	.85	.15
Ammonium Bichromate, chem. pure.....	.80	.15
Ammonium Binoxalate .....	.80	.15
Ammonium Bisulphate, pure.....	.85	.20
Ammonium Bisulphite, pure.....	2.25	.25
Ammonium Bromide .....	.50	.15
Ammonium Bromide, chem. pure.....	1.60	.20
Ammonium Carbonate, resublimed, pure, 5-lb. cans.....	.25	
Ammonium Carbonate, resublimed, powdered, 5-lb. cans .....	.25	
Ammonium Carbonate, chem. pure.....	.50	.10
Ammonium Chloride, granul., purified.....	.15	
Ammonium Chloride, lumps.....	.20	
Ammonium Chloride, granul., pure.....	Carton .30	.10
Ammonium Chloride, chem. pure, hydc. free.....	.50	
Ammonium Chromate, chem. pure.....	2.00	.25
Ammonium Citrate	1.50	.20
Ammonium Fluoride, chem. pure.....	2.00	.25
Ammonium Formate, pure.....		.30
Ammonium Hydrate (aqua ammonia), conc., 26° B., in 1-lb. bottles, incl.	.30	
Ammonium Hydrate (aqua ammonia), conc., 26° B., in 4-lb. bottles, incl.	.18	
Ammonium Hydrate (aqua ammonia), conc., 26° B., in carboys.....incl.	.10	
Ammonium Hydrate, strictly chem. pure, in 1-lb. bottles.....incl.	.35	
Ammonium Hydrate, strictly chem. pure, in 4½-lb. bottles.....incl.	.23	
Ammonium Hydrate, strictly chem. pure, in carboys.....incl.	.16	
Ammonium Hydrosulphide (solution), Mall.....	Bottle, \$0.15	.35
Ammonium Hydrosulphide (solution), Merck's	Bottle, .15	.40
Ammonium Hypophosphite .....		.25
Ammonium Hyposulphite (thiosulphate)	1.50	.20
Ammonium Iodide	4.50	.45
Ammonium Molybdate, chem. pure.....	2.00	.25
Ammonium Nitrate, granul.....	.30	
Ammonium Nitrate, cryst., chem. pure.....	.55	.15
Ammonium Nitrite, liquid.....	1.10	.20
Ammonium Oxalate, chem. pure .....	.60	.15
Ammonium Persulphate	1.20	.20

	Pound.	Ounce.
Ammonium Phosphate	\$0.30	
Ammonium Phosphate, pure, granular .....	.70	\$0.10
Ammonium Phosphate, chem. pure, (dibasic)	1.00	.20
Ammonium Phosphite, pure .....		.50
Ammonium Phospho-Molybdate		1.00
Ammonium Picrate, pure	2.00	.25
Ammonium Salicylate .....		.20
Ammonium Succinate, cryst., pure	10.00	1.00
Ammonium Sulphate, com'l .....	.10	
Ammonium Sulphate, chem. pure .....	.35	.10
Ammonium Sulphide, Mall	Bottle, \$0.15	.35
Ammonium Sulphite, cryst., chem. pure	1.40	.20
Ammonium Sulphocyanate, pure .....	.75	.15
Ammonium Tartrate, pure	1.50	.20
Ammonium Thiosulphate	1.50	.20
Ammonium Tungstate (Wolframate), pure .....		.35
Ammonium Vanadate, pure		1.10
Ammonium and Sodium Phosphate, chem. pure .....	.80	.15
Ammonium Double Salts. (See under their respective metals.)		
Amygdalin		1.10
Amyl Acetate ("pear oil"), pure	1.00	.20
Amyl Acetate, chem. pure	2.00	.40
Amyl Nitrate .....		.45
Amyl Nitrite	2.50	.30
Amylen Hydrate, pure .....		.60
Amylum Iodide or Iodized Starch .....		.35
Aniline (Aniline Oil), white, pure .....	.60	.15
Aniline Acetate .....		.30
Aniline Chloride .....		.50
Aniline Nitrate .....		.25
Aniline Oxalate .....		.25
Aniline Sulphate .....		.25
Aniline Colors (coal tar dyes):		
Black Nigrosine, soluble in water	1.50	.25
Black, Nigrosine, soluble in alcohol	2.00	.30
Blue .....		.30
Blue, Methyl .....		.75
Blue, Methylene .....		.50
Blue, Pearline	1.50	.20
Brown, Bismarck	1.50	.30
Green, Malachite	1.50	.35
Green, Methyl .....		.30

Containers Included Unless Otherwise Specified.

Aniline Colors (coal tar dyes)—Continued.	Pound.	Ounce.
Green, Brilliant	\$1.50	\$0.30
Orange, Methyl, Indicator .....		.40
Orange, "G" .....		.30
Red, Fuchsine, large cryst.	1.60	.35
Red, Congo Red .....		.35
Red, Coraline .....		.35
Red, Eosine .....		.35
Red, Safranine .....		.35
Rose, Bengal .....		.80
Violet, Gentian .....		.35
Violet, Methyl .....		.35
Violet, Hofmann's .....		.40
Yellow, Martius' .....		.30
Anthrachinone, pure .....		.50
Antimony, metal, com'l, "Regulus" .....		.35
Antimony, metal, com'l, powder .....		.40
Antimony, metal, chem. pure	1.50	.15
Antimony, metal, chem. pure, in sticks	2.00	.20
Antimony Arsenate .....		.30
Antimony Arsenite .....		.30
Antimony Chloride, cryst., pure (antimonious trichloride)	1.50	.25
Antimony Chloride, solution (butter of antimony)	Bottle, \$0.15	.30
Antimony Chloride, Antimonic (pentachloride), chem. pure	2.00	.30
Antimony Oxide, white .....		.60
Antimony Oxide (antimonous or stibic acid) Sb_2O_5 , chem. pure	1.00	.20
Antimony Oxide (antimonious or stibious acid) Sb_2O_3 , chem. pure.....	1.00	.20
Antimony Oxychloride		1.50
Antimony Sulphate, chem. pure .....		.15
Antimony Sulphide, golden (antimonic penta-sulphide) .....		.50
Antimony Sulphide, black (antimonious trisulphide) .....		.60
Antimony Sulphide, red, chem. pure		1.60
Antimony and Potassium Tartrate, cryst., chem. pure .....		.70
Antimony and Potassium Tartrate powder (tartar emetic) .....		.50
Aqua Ammonia. (See Ammonium Hydrate.)		
Argols, red powd.	5 lbs., \$0.12	.15
Arsenic, metal, pure, cryst. ....		.60
Arsenic Bromide, cryst. ....		.35
Arsenic Chloride		3.00
Arsenic Iodide, pure, cryst. ....		.60
Arsenic Phosphide		1.00
Arsenic Sulphide, red powder (Realgar) .....		.40
Arsenic Sulphide, yellow powder (Orpiment) .....		.35

Containers Included Unless Otherwise Specified.

	Pound.	Ounce.
Asbestos Cement	Per 10-lb. can, \$1.00	
Asbestos Pulp .....	.10	
Asbestos, short fibre.....	.30	
Asbestos, long fibre, white, select.....	1.50	\$0.15
Asbestos, washed in acid	2.00	
Asbestos, washed in acid and ignited.....	2.50	.25
Asbestos, platinized, 5%.....		4.00
Asparagin		1.00
Asphaltum .....	.25	
Azobenzole (azobenzene), pure .....		.50
Balsam Fir, pure (Canada Balsam).....	.75	.15
Balsam Fir, clear, filtered.....	1.50	.20
Balsam Fir, dry, hard.....	3.50	.30
Barium Acetate, chem. pure.....	.90	.20
Barium Bromide .....		.35
Barium Carbonate, precip.....	.20	
Barium Carbonate, chem. pure.....	.70	.15
Barium Chlorate, chem. pure.....	.80	.15
Barium Chloride, com'l.....	.12	
Barium Chloride, chem. pure.....	.30	
Barium Chromate, chem. pure.....	.90	.20
Barium Fluoride, chem. pure.....	1.00	.20
Barium Hypophosphite .....		.40
Barium Hyposulphite (thiosulphate), chem. pure.....		.35
Barium Iodate .....		.75
Barium Iodide .....		.60
Barium Nitrate, cryst.....	.20	
Barium Nitrate, powd.....	.20	
Barium Nitrate, cryst., chem. pure.....	.40	.10
Barium Oxalate, pure.....	1.00	.15
Barium Oxide, hydrated (caustic), chem. pure.....	.60	.15
Barium Oxide, hydrated (caustic), chem. pure, dry.....	.80	.20
Barium Oxide, anhydrous, pure.....	.60	.15
Barium Peroxide, anhydrous.....	.45	.15
Barium Peroxide, anhydrous, pure.....	.70	.15
Barium Phosphate, chem. pure.....	1.80	.25
Barium Sulphate, native (barytes, heavy spar).....	.10	
Barium Sulphate, native, powder.....	.10	
Barium Sulphate, precipitated, pure.....	.40	
Barium Sulphide, com'l.....	.30	
Barium Sulphide, chem. pure.....	.80	.15
Barium Sulphocyanate, pure.....	1.00	.15

Containers Included Unless Otherwise Specified.

	Pound.	Ounce.
Barium Thiosulphate, chem. pure.....		\$0.35
Battery Fluid.....	Bottle, \$0.30; gal., \$0.75	
Bauxite		\$0.20
Benzaldehyde		1.25 .20
Benzine (petroleum naphtha)	Can, \$0.20; gal., \$0.35	
Benzine, chem. pure.....		.80
Benzol (benzene, coal naphtha), purif., 90%	Gal., \$1.50	.30
Benzole, chem. pure, crystallizable.....		.60 .15
Benzoyl Chloride, pure.....		.40
Benzyl Chloride, pure.....		.25
Beryllium Metal	1-10 grm., \$1.25	
Beryllium Carbonate	1 grm., .20	
Beryllium Chloride	1 grm., .20	
Beryllium Oxide, hydrated.....	1 grm., .20	
Beryllium Oxide, anhydrous.....	1 grm., .20	
Beryllium Sulphate	1 grm., .20	
Bismuth, metal, pure		3.00 .30
Bismuth, metal, chem. pure.....		4.00 .40
Bismuth Bromide .....		.50
Bismuth Carbonate		5.00 .50
Bismuth Chloride		5.00 .50
Bismuth Iodide .....		.80
Bismuth Nitrate, cryst.....		2.50 .30
Bismuth Oxide, anhydrous.....		5.00 .50
Bismuth Oxide, hydrated.....		5.00 .50
Bismuth Oxychloride		3.00 .30
Bismuth Phosphate		4.00 .40
Bismuth Subcarbonate (oxycarbonate)		3.00 .30
Bismuth Subnitrate		2.50 .25
Bismuth Sulphate		4.50 .45
Bismuth Tannate		3.00 .30
Black Flux (Plattner's).....		1.75 .20
Bone Ash, superior quality.....		.08
Bone Ash.....	25, 50 and 100-lb. boxes	.05
Bone Ash. In bbl., special rates.		
Bone Ash, washed.....		.40
Bone Black. (See Charcoal, Animal.)		
Borax, refined, crystals.....		.15
Borax, refined, crystals.....	25 and 50-lb. boxes	.10
Borax, refined, powdered .....		.15
Borax, refined, powdered.....	25 and 50-lb. boxes	.10
Borax Glass, powdered.....		.25

Containers Included Unless Otherwise Specified.

THE DENVER FIRE CLAY COMPANY.

	Pound.	Ounce.
Borax Glass, powdered.....	25, 50 and 100-lb. boxes	\$0.25
Borax Glass. In bbl., special rates.		
Brazil wood.....		.25
Bromine 1 lb. inc. tin and g. s. b.	1.00	\$0.25
Bromine ½ lb. inc. tin and g. s. b.	1.20	
Bromine ¼ lb. inc. tin and g. s. b.	1.50	
Bromine Chloride .....		.70
Bromoform .....		.25
Brucine, pure.....	Dram, \$0.25	1.80
Cadmium, metal, in sticks.....	2.00	.20
Cadmium Acetate, chem. pure.....	3.00	.30
Cadmium Bromide, chem. pure.....	2.00	.25
Cadmium Carbonate, chem. pure.....	3.00	.35
Cadmium Chloride, chem. pure.....	2.50	.25
Cadmium Iodide, chem. pure.....	5.00	.50
Cadmium Nitrate, chem. pure.....	2.20	.25
Cadmium Oxide, chem. pure	5.00	.50
Cadmium Sulphate, chem. pure.....	2.20	.25
Cadmium Sulphide, chem. pure.....	3.50	.40
Caesium Chloride.....	Grm., \$ 0.40	
Calcium Metal .....		.50
Calcium Acetate, crude.....	.20	
Calcium Acetate, chem. pure.....	.65	.15
Calcium Bisulphite, solution.....	.35	
Calcium Bromide .....	.80	.15
Calcium Carbide	per 2-lb. tin, \$0.30; 10-lb. tin, \$1.25	
Calcium Carbonate, precipitated .....		.15
Calcium Carbonate, chem. pure .....		.70
Calcium Chlorate		2.50
Calcium Chloride, crude.....	in 5-lb. tins, lb., \$0.12	.15
Calcium Chloride, crude, granular.....	in 5-lb. tins, lb.,	.25
Calcium Chloride, anhydrous, for desiccators.....		.40
Calcium Chloride, anhydrous, chem. pure.....		.70
Calcium Chloride, cryst., chem. pure.....		.40
Calcium Chloride, fused, gran., chem. pure.....		.60
Calcium Chromate, chem. pure.....		.75
Calcium Fluoride, native, powdered.....		.10
Calcium Fluoride, chem. pure.....		1.50
Calcium Formate .....		.30
Calcium Hypochlorite (chloride of lime).....	1-lb. cans	.15
Calcium Hypochlorite (chloride of lime).....	10-lb. cans	.10
Calcium Hypochlorite, chem. pure.....		.80

Containers Included Unless Otherwise Specified.

	Pound.	Ounce.
Calcium Hypophosphite	\$1.00	\$0.20
Calcium Iodate .....		.60
Calcium Iodide .....		.50
Calcium Molybdate	3.50	.40
Calcium Nitrate, chem. pure	1.00	.20
Calcium Oxalate, chem. pure.....	1.50	.20
Calcium Oxide, caustic.....		.10
Calcium Oxide, pure, from marble.....		.40
Calcium Oxide, chem. pure.....		.60
Calcium Phosphate, precip.....		.30
Calcium Phosphate, dibasic, chem. pure.....	1.00	.20
Calcium Phosphate, monobasic, pure.....	1.50	.20
Calcium Phosphate, tribasic, precip., dry.....	1.00	.15
Calcium Phosphide, chem. pure.....		2.50
Calcium Phosphite, chem. pure.....		3.00
Calcium Silicate, pure.....		1.00
Calcium Sulphate (gypsum, plaster paris).....		.10
Calcium Sulphate, pure.....		.50
Calcium Sulphate, chem. pure.....		.60
Calcium Sulphide .....		.50
Calcium Sulphite, com'l.....		.25
Calcium Sulphite, pure.....		.50
Calcium Thiosulphate		1.20
Calcium Tungstate		2.00
Camphor, refined.....		1.20
Canada Balsam. (See Balsam Fir.)		
Carbon Bisulphide (sulphur alcohol).....in 5-lb. tins, lb., \$0.20		.25
Carbon Bisulphide, pure.....		.60
Carbon Dichloride (C_2Cl_4).....		2.00
Carbon Tetrachloride (CCl_4).....		.40
Carbon Tetrachloride (CCl_4), chem. pure.....		1.00
Carbon Trichloride (C_2Cl_6).....		.80
Carborundum, powder.....		.50
Carmine, No. 40.....		.50
Casein, com'l .....		.50
Casein, chem. pure		4.00
Celloidin, in shreds, for microscopic work.....Box, \$1.00		
Cerium, metal, powd.....Gm., 4.00		
Cerium Chloride		2.50
Cerium Nitrate		2.50
Cerium Oxalate .....		.60
Cerium Oxide		3.00
		.30

THE DENVER FIRE CLAY COMPANY.

	Pound.	Ounce.
Cerium Sulphate (ceric).....	\$0.35	
Cerium Sulphate (cerous) .....	.35	
Chalk, in lumps.....	\$0.10	
Chalk, precipitated .....	.15	
Chalk, red (reddle).....	.20	
Chalk, French (talcum).....	.10	
Charcoal, Animal, granul.....	.15	
Charcoal, Animal, powd.....	.10	
Charcoal, Animal, purified.....	.50	
Charcoal, Animal, pure.....	2.25	
Charcoal from blood, purified by acid.....	2.50	.30
Charcoal, from meat.....	3.00	.30
Charcoal, from wood, in squares, 4 x 1 inch.....	Doz., \$0.50	
Charcoal, from wood, powd.....	.10	
Chloral Hydrate, cryst.....	1.60	.20
Chloroform, pure .....	.60	
Chloroform, pure, Squibb's	1.25	
Chlorophyll, chem. pure.....	Grm., \$0.40	
Chlorophyll, technical .....		.40
Chromium, metal	Grm., \$0.60	
Chromium Metal, electrolytic.....	2.50	.25
Chromium Acetate, chem. pure	2.00	.25
Chromium Chloride, chem. pure, green crystals.....	1.60	.20
Chromium Chloride, subl., sesqui (Cr_2Cl_6)		1.00
Chromium Chloride, subl., sesqui (Cr_2Cl_6), solution.....	2.00	.20
Chromium Nitrate	2.00	.25
Chromium Oxalate	1.40	.20
Chromium Oxide (Cr_2O_3), pure.....	1.00	.20
Chromium Oxide, hydrated ($\text{Cr}_2(\text{OH})_6 + 4\text{H}_2\text{O}$) .....	.70	.15
Chromium Sulphate	2.00	.25
Cinnabar, native.....	1.75	.20
Cobalt Metal, cubes, 98-99%.....	6.00	.50
Cobalt Metal, chem. pure.....		1.75
Cobalt Acetate, cryst.....	4.00	.40
Cobalt Arsenate, pure.....	6.00	.60
Cobalt Carbonate, pure.....	4.00	.40
Cobalt Chloride, pure.....	2.50	.30
Cobalt Chromate .....		.40
Cobalt Nitrate, pure.....	2.50	.30
Cobalt Oxide, com'l, "zaffre".....	.80	.10
Cobalt Oxide, black	4.50	.45

	Pound.	Ounce.
Cobalt Phosphate, pure.....	\$4.00	\$0.40
Cobalt Sulphate, pure.....	2.00	.25
Cochineal .....	.90	.10
Cochineal, powd.....	1.00	.10
Collodion, U. S. P.....	.90	.15
Congo Paper.....	Sheet, \$0.10	
Copper Filings .....	.50	
Copper Turnings .....	.40	
Copper, metal, granular, com'l .....	.60	
Copper, metal, granular, pure	1.50	
Copper, metal, foil .....	.50	
Copper, metal, foil, pure, Merck's, 99.95% Cu	1.50	.15
Copper, metal, fine powder, chem. pure	2.50	.30
Copper, metal, wire, pure .....		.10
Copper Acetate, basic (verdigris) .....	.50	
Copper Acetate, chem. pure .....	.80	.15
Copper Arsenate, chem. pure	1.00	.15
Copper Arsenite, pure	2.00	.20
Copper Bichloride, pure .....	.60	.15
Copper Bromide .....		.40
Copper Carbonate .....	.40	
Copper Carbonate, chem. pure .....	.70	.15
Copper Chloride, cryst., pure (bichloride) (cupric) .....	.60	.15
Copper Chloride, white (monochloride) (cuprous)	1.60	.20
Copper Chromate .....		.20
Copper Cyanide, chem. pure	1.50	.20
Copper Ferrocyanide	2.00	.25
Copper Iodide .....		.60
Copper Nitrate, cryst., chem. pure .....	.75	.15
Copper Nitroprusslate .....		.50
Copper Oxide, black, com'l, pow'd .....	.50	
Copper Oxide, black, pow'd, chem. pure .....	.90	.15
Copper Oxide, black, granulated, chem. pure	1.20	.20
Copper Oxide, black, wire form, chem. pure	1.60	.20
Copper Oxide, red, pure (cuprous)	1.50	.20
Copper Oxide, red, com'l .....	.50	.10
Copper Phosphate .....		.30
Copper Sulphate, cryst. (blue vitriol) .....	.15	
Copper Sulphate. In barrels, special quotation.		
Copper Sulphate, cryst., chem. pure .....	.50	.15
Copper Sulphate, anhydrous, chem. pure	1.00	.20
Copper Sulphide, pow'd	1.00	.15

Containers Included Unless Otherwise Specified.

	Pound.	Ounce.
Copper Sulphide, fused	\$0.80	\$0.15
Copper Sulphocyanate	2.00	.25
Copper Tannate .....		.25
Copper and Ammonium Chloride, chem. pure .....	.60	.15
Copper and Ammonium Sulphate, chem. pure .....	.60	.15
Copper and Potassium Chloride, chem. pure .....	.60	.15
Copperas .....	.05	.
Cotton, Absorbent .....	.40	.10
Cotton, Soluble .....		.40
Creosote, from coal tar .....	.70	.15
Creosote, from beech tar	1.50	.20
Cryolite, pow'd .....	.20	
Curare	Grm., \$1.50	
Dextrine, yellow, com'l .....	.15	
Dextrine, white, com'l .....	.15	
Dextrine, pure, prec. by alcohol .....	.80	.20
Dextrose (grape sugar), chem. pure	1.50	.20
Diamidobenzol, meta (phenylenediamine hydrochlorate)		2.00
Diamond Ink, for etching on glass .....		.50
Dianol (developer) .....		.50
Diastase of Malt		1.00
Didymium, metal, pow'd	Grm., \$9.00	
Didymium Carbonate	Grm., .40	
Didymium Chloride	Grm., .40	
Didymium Nitrate	Grm., .40	
Didymium Oxide	Grm., .40	
Didymium Sulphate	Grm., .40	
Dimethyl-amido-azo-benzene .....		.90
Dimethylaniline, pure		1.00
Dimethylglyoxime	Grm., \$0.50; $\frac{1}{8}$ oz., \$1.50	
Dinitrobenzene (dinitrobenzol), com'l .....	.50	.10
Dinitrobenzene, pure .....		.30
Diphenylamine, cryst., chem. pure .....		.25
Diphenylamine Sulphate, chem. pure .....		.25
Diphenylamine Hydrochlorate, chem. pure .....		.40
Distilled Water	Gal., \$0.15	
Dutch Metal	Book, \$0.15	
Edinol (developer) .....		.75
Eikonogen (developer) .....		.40
Emery, finely powdered .....		.15
Erbium, metal	Grm., \$7.50	
Eschka Mixture .....		.80

Containers Included Unless Otherwise Specified.

	Pound.	Ounce.
Ether, Acetic (ethyl acetate)	\$0.80	
Ether, Acetic, twice rectif.	1.50	
Ether, Acetic, anhydrous	2.50	
Ether, conc. (sulphuric), 1890	1-lb. cans incl., .45	
Ether, conc. (sulphuric), 1890	5-lb. cans incl., .40	
Ether, conc., Squibb's	1.00	
Ether, anhydrous, dist. over Sodium	2.00	
Ether Petroleic (rhigolene), 25° to 45° .....	.80	
Ethyl Iodide		\$0.60
Eugenol .....		.40
Feldspar, pow'd .....	.10	
Ferromanganese, 80% .....	.30	
Fibrin, from blood .....		.35
Fire Clay .....		.05
Fire Clay	In 100-lb. sacks, \$0.50	
Fluorescein .....		.75
Fluorescin .....		.90
Fluorspar (calcium fluoride), pow'd .....	.10	
Special prices in large lots.		
Flux, Black, Plattner's .....	.1.75	.20
Flux, Black, substitute .....	.40	.10
Flux, Bismuth	3.00	.30
Flux, Richard's .....	.20	
Flux, for lead assays. (See Lead Flux.)		
Formaldehyde (40%) solution	1-lb. bottle, inc., .30	
Formaldehyde (40%) solution	5-lb. bottle, inc., .25	
Fuller's Earth .....	.10	
Furfural .....		.80
Fusel Oil (alcohol amylic)	Gal., \$2.50	
Gelatine, finest white, "Gold Label" .....	.60	
Glass, pow'd .....	.10	
Glass Wool, finest grade	7.00	.50
Glucose	Gal., \$1.00	.15
Glycerin, pure	In 50-lb. cans, lb., \$0.30	.40
Glycerin, chem. pure .....		.50
Gold, metal, chem. pure, prec., pow'd	Grm., \$1.75	
Gold, metal, foil and sheet	Grm., .85	24.00
Gold, metal, leaf	Book, .50	
Gold Bromide	15 grains, 1.50	
Gold Chloride	15 grains, .50	13.00
Gold Chloride and Sodium	15 grains, .30	7.00
Gold Cyanide	15 grains, 2.00	

	Pound.	Ounce.
Grape Sugar, com'l, dry	\$0.15	
Grape Sugar, chem. pure (Dextrose)	1.50	\$0.20
Graphite, com'l, pow'd .....	.25	
Graphite, pure, finely pow'd .....	.70	.15
Gum Arabic, best .....	.65	
Gun Cotton (pyroxylin), soluble .....		.40
Gypsum .....	.10	
Hæmatite (reddle) .....	.20	
Hæmatoxylin	1/8 oz., .25	1.60
Heavy Spar (barytes) .....	.10	
Heliotropin .....		.50
Hæmoglobin		1.10
Hide Powder	2.00	
Hydrogen Peroxide, Mallinckrodt's, U. S. P. ....	.35	
Hydrogen Peroxide, Marchand's .....	.90	
Hydrone	Per 2-lb. tin, \$1.50	
Hydroquinone	1.60	.20
Iceland Spar	1.00	
Iceland Spar, pure, small crystals	5.00	
Iceland Spar, pure, large crystals	15.00	
Indigo	1.00	.15
Indigo Carmine, dry .....		.40
Indigo Solution .....	.50	.10
Indigotin, cryst., chem. pure	1/8 oz., \$0.60	
Indium, metal	15 grains, 8.00	
Indium Chloride	15 grains, 8.00	
Indium Oxide	15 grains, 9.00	
Indium Sulphate	15 grains, 8.00	
India Rubber	2.50	.25
Infusorial Earth (Kieselguhr) .....	.25	
Iodine, resublimed, U. S. P.	4.00	.40
Iodine Bromide .....		.60
Iodine Chloride, solution .....		.70
Iodoform .....		.40
Iridium, metal, fused	Grm., \$4.00	
Iridium Chloride (sesqui-)	Grm., 2.00	
Iridium Oxide (sesqui-)	Grm., 3.00	
Iridium Sulphate	Grm., 2.50	
Iron, metal, filings, coarse .....	.10	
Iron, metal, filings, fine .....	.10	
Iron, metal, powder, by alcohol .....	.35	.10
Iron, metal, powder, chem. pure	1.60	.20

Containers Included Unless Otherwise Specified.

	Pound.	Ounce.
Iron Wire, pure, for standardizing, in 1-oz. vials		\$0.15
Iron, reduced by hydrogen	\$0.75	.15
Iron Acetate, chem. pure	1.25	.20
Iron Arsenate (-ous) .....		.20
Iron Arsenite (-ic) .....		.20
Iron Carbonate, precip. ....	.20	
Iron Carbonate (-ous), chem. pure .....	.40	
Iron Chloride (ferric), cryst., pure .....	.40	.15
Iron Chloride (ferrous protochloride), pure, dry .....	.70	.15
Iron Citrate, in scales, U. S. P. ....	.80	.15
Iron Ferrocyanide, blue, insoluble (Prussian blue) .....	.75	.15
Iron Ferrocyanide, blue, soluble .....	.75	.15
Iron Hydrate (-ic), chem. pure .....	.75	.15
Iron Hypophosphite	2.25	.25
Iron Iodate .....		.70
Iron Iodide (ferrous) .....		.45
Iron Malate, in scales		1.20
Iron Nitrate (ferric), cryst., pure	1.20	.20
Iron Oxalate (ferric), in scales	2.00	.25
Iron Oxalate (ferrous)	1.50	.20
Iron Oxide, black .....	.50	.15
Iron Oxide, brown, pure .....	.70	.15
Iron Oxide (-ous), chem. pure .....	.90	.15
Iron Oxide, red .....	.15	
Iron Oxide, red, saccharated, soluble .....	.60	.15
Iron Oxide (-ic), chem. pure	1.00	.20
Iron Perchloride, cryst., pure .....	.40	.15
Iron Persulphate .....	.50	.15
Iron Phosphate (ferric), soluble	1.00	.15
Iron Phosphate (ferrous), precip. ....	.80	.15
Iron Pyrophosphate, U. S. P. ....	.70	.15
Iron Sesquichloride, cryst., pure .....	.40	.15
Iron Sulphate (ferric), normal (persulphate) .....	.50	.15
Iron Sulphate (ferrous) (copperas) .....	.05	

Special quotation in quantities.

Iron Sulphate (ferrous), pure, crystals	5-lb. tins, lb., \$0.12	.15
Iron Sulphate (ferrous), chem. pure, precip. by alcohol .....	.50	.15
Iron Sulphide, in lumps .....		.15

Special quotations on large quantities.

Iron Sulphide, in sticks .....	.20
Iron Sulphide, globular .....	.20

Containers Included Unless Otherwise Specified.

	Pound.	Ounce.
Iron Sulphide, Merck's Reagent	\$0.60	
Iron Tannate	2.50	\$0.30
Iron Tartrate (ferric), in scales .....		.25
Iron Tartrate (ferrous) .....		.25
Iron Trichloride, cryst., pure .....	.40	.15
Iron and Ammonium Citrate, brown, scales .....	.80	.15
Iron and Ammonium Oxalate, cryst. ....	.90	.15
Iron and Ammonium Sulphate, pure (ferrous) .....	.60	.15
Iron and Ammonium Sulphate, pure (ferric) .....	.60	.15
Iron and Potassium Oxalate, cryst. ....	.80	.15
Kaolin .....	.10	

Special quotations in quantities.

Lacmoid, in scales, chem. pure .....		.30
Lanthanum, metal, pow'd	Grm., \$10.00	
Lanthanum Chloride	Grm., .50	
Lanthanum Nitrate	Grm., .40	
Lanthanum Sulphate	Grm., .40	
Lead, metal, granulated (silver lead)	Bulk	.20
Lead, metal, granulated (silver lead)	25 and 50-lb. sacks	.15

Note:—This lead is made from our absolutely chem. pure lead, and is guaranteed to contain 0.225 troy oz. of silver, actual weight per ton of lead; consequently, if about 40 grammes of it are taken in assaying 1-10 A. T. of ore, the silver assay is accordingly increased about 3 troy oz. per ton of ore.

Lead, metal, granulated, absolutely chem. pure	Bulk	.20
Lead, metal, granulated, absolutely chem. pure	25 and 50-lb. sacks	.15
Lead, metal, foil, strictly chem. pure, for standardizing .....		.25
Lead, metal powder, chem. pure		1.00
Lead Acetate, white (sugar of lead), com'l .....		.20

In barrels, market quotation.

Lead Acetate, chem. pure	Carton	.40	.10
Lead Acetate, chem. pure, basic .....		.80	.15
Lead Acetate, Dr. Horne's formula .....		.60	
Lead Bromide		2.00	.25
Lead Carbonate, basic, com'l (white lead) .....		.15	
Lead Carbonate, chem. pure .....		.70	.15
Lead Chloride .....		.60	
Lead Chloride, chem. pure .....		.80	.15
Lead Chromate, chem. pure		1.00	.15
Lead Chromate, chem. pure, fused		1.10	.15
Lead Cyanide .....			.25
Lead Ferrocyanide .....			.25
Lead Hyposulphite (thiosulphate) .....		.60	.10

	Pound.	Ounce.
Lead Iodide		\$0.35
Lead Molybdate .....		.70
Lead Nitrate, com'l	\$0.20	
Lead Nitrate, chem. pure	Carton .40	.10
Lead Oxalate	1.00	.20
Lead Oxide (litharge). (See Lead Protoxide.)		
Lead Oxide, chem. pure	1.00	.20
Lead Peroxide (binoxide) .....	.50	.15
Lead Peroxide, chem. pure	1.00	.20
Lead Phosphate, pure	\$1.50	\$0.20
Lead Protoxide (litharge), for assaying silver, uniform grade .....	.12	
Lead Protoxide (litharge), for assaying silver, uniform grade, in 25 and 50-lb. kegs .....	.10	
Lead Protoxide, chem. pure .....	.20	
Lead Protoxide, chem. pure, in 25 and 50-lb. sacks .....	.15	
Lead Protoxide, anhydrous, chem. pure	1.20	.20
Lead Sesquioxide (red lead) .....	.15	
Lead Sulphate, chem. pure .....	.60	.15
Lead Sulphide, pure .....	.80	.15
Lead Sulphite	1.00	.15
Lead Sulphocyanate	1.50	.20
Lead Tartrate	1.50	.20
Lead Flux, No. 1, Plattner's .....	.20	
5 parts Carbonate Potash.		
6½ parts Bicarbonate Soda.		
2½ parts Flour.		
2½ parts Borax Glass, ground.		
Lead Flux, No. 2 .....	.20	
6½ parts Carbonate Potash.		
5 parts Bicarbonate Soda.		
1 part Flour.		
2½ parts Borax Glass, ground.		
Lead Flux, No. 3 .....	.20	
2 parts Carbonate Potash.		
2 parts Bicarbonate Soda.		
1 part Flour.		
1 part Borax Glass, ground.		
Lead Flux, No. 4 .....	.17	
2 parts Carbonate Potash.		
2 parts Bicarbonate Soda.		
1 part Flour.		
1 part Borax, powdered.		
(Above Fluxes in lots of 100 lbs. and over, 5 cents less per lb.)		
Lime (calcium oxide) .....	.10	

Containers Included Unless Otherwise Specified.

	Pound.	Ounce.
Lime (Vienna), lumps	\$0.20	
Lime (Vienna), powder .....	.25	
Litharge. (See Lead Protoxide.)		
Lithium, metal	Grm., \$6.00	
Lithium Acetate	3.00	\$0.35
Lithium Benzoate	2.00	.25
Lithium Bichromate	4.00	.40
Lithium Bromide	2.00	.25
Lithium Carbonate	1.50	.20
Lithium Chloride	\$2.50	\$0.25
Lithium Citrate	1.50	.20
Lithium Iodide	5.00	.50
Lithium Nitrate	2.50	.25
Lithium Oxide, hydrated .....		.50
Lithium Phosphate .....		.40
Lithium Sulphate, cryst. ....		.25
Litmus, com'l, in cubes .....	.35	.10
Litmus, Purified .....		.35
Litmus, red .....		.35
Litmus Paper	Sheet, \$0.05; quire, \$0.60	
Loadstone .....	.50	.10
Lycopodium	1.00	.15
Magnesia Oxide, powdered .....	.15	
Magnesite, native, powder .....	.15	
Magnesium, metal, ribbon .....		.60
Magnesium, metal, wire .....		.60
Magnesium, metal, powder	1-lb. cans	.35
Magnesium Acetate	1.00	.20
Magnesium Bromide	3.00	.35
Magnesium Carbonate, in cubes .....	.30	
Magnesium Carbonate, nat. powder .....	.25	
Magnesium Carbonate, chem. pure	1.00	.15
Magnesium Chloride, cryst. ....	.35	
Magnesium Chloride, cryst., chem. pure .....	.40	.15
Magnesium Chloride, fused, chem. pure .....	.75	.20
Magnesium Citrate, chem. pure	1.40	.20
Magnesium Hypophosphite	2.50	.25
Magnesium Iodide	6.00	.60
Magnesium Nitrate, pure .....	.70	.15
Magnesium Oxide (calcined), light	1-lb. tins	.80
Magnesium Oxide (calcined), heavy	1-lb. tins	.80
Magnesium Oxide, chem. pure	1.20	.20
Magnesium Phosphate, pure .....	.70	.15

Containers Included Unless Otherwise Specified.

	Pound.	Ounce.
Magnesium Sulphate, com'l (Epsom salt)	\$0.10	
Magnesium Sulphate, cryst., chem. pure	Carton .25	
Magnesium Sulphate, dry, chem. pure	Carton .30	
Magnesium Sulphite .....	.60	\$0.15
Magnesium Tartrate	2.50	.30
Maltose	1.75	.20
Manganese, metal, fused, pure .....		.60
Manganese, metal, C. free	2.00	
Manganese Acetate	1.10	.15
Manganese Borate .....	.40	.10
Manganese Carbonate, pure .....	.75	.15
Manganese Chloride, cryst., pure .....	.50	.15
Manganese Dioxide. (See Manganese Peroxide).		
Manganese Hypophosphite .....		.25
Manganese Iodide .....		.60
Manganese Nitrate, pure	1.50	.20
Manganese Oxide (manganic) (Mn_2O_3)	4.00	.40
Manganese Peroxide, black (dioxide), natural, pow'd .....	.10	
Manganese Peroxide, black (dioxide), natural, granular .....	.15	
Manganese Peroxide, black (dioxide), chem. pure	1.00	.15
Manganese Phosphate	2.50	.25
Manganese Sulphate, cryst., pure .....	.60	.15
Manganese Tartrate	4.00	.40
Marble, pieces .....	.10	
Mercury, metal .....	.90	.10
Mercury, metal, flask, 75 lbs. Write for special quotations.		
Mercury, redistilled	1.20	.15
Mercury Acetate (mercurous)	3.00	.30
Mercury Acetate (mercuric)	2.50	.30
Mercury Arsenate .....		.40
Mercury Arsenite .....		.40
Mercury Bichloride (corrosive sublimate), com'l	1.00	.15
Mercury Bichloride (corrosive sublimate), granular	1.10	.15
Mercury Bichloride (corrosive sublimate), pow'd	1.10	.15
Mercury Bichloride (corrosive sublimate), chem. pure, B. & A.	1.50	.20
Mercury Bichloride (corrosive sublimate), chem. pure, Merck's	1.60	.25
Mercury Bisulphate	1.00	.15
Mercury Chloride (calomel)	1.20	.15
Mercury Chloride (calomel), cryst., chem. pure	1.60	.20
Mercury Chromate (mercuric)	4.00	.40
Mercury Cyanide, pure	4.00	.40
Mercury Iodide, red (mercuric)	3.50	.30

Containers included unless otherwise specified.

	Pound.	Ounce.
Mercury Iodide, yellow (mercurous)	\$3.25	\$0.30
Mercury Nitrate (mercuric)	1.60	.25
Mercury Nitrate (mercurous)	1.60	.25
Mercury Oxide (mercurous), black	2.50	.25
Mercury Oxide (mercuric), red	1.30	.15
Mercury Oxide (mercuric), red, chem. pure	1.75	.25
Mercury Oxide (mercuric), yellow, chem. pure	2.00	.25
Mercury Pernitrate	1.60	.25
Mercury Phosphate (mercuric) .....		.45
Mercury Phosphate (mercurous) .....		.45
Mercury Protochloride	1.20	.15
Mercury Sulphate, basic	1.50	.20
Mercury Sulphate, neutral	1.00	.15
Mercury Sulphate (mercuric), chem. pure	1.60	.20
Mercury Sulphate (mercurous), chem. pure	1.80	.25
Mercury Sulphide, black .....	.90	.15
Mercury Sulphide, red (mercuric), pow'd, artificial cinnabar	1.25	.20
Mercury Sulphide, red (mercuric), cryst., artificial cinnabar	1.75	.25
Mercury Sulphocyanate (mercuric)	3.00	.30
Mercury Tannate (mercurous)	3.00	.30
Metadiaminobenzol .....		.80
Metal, Wood's, fusible at 70°	3.50	.30
Metal, Rose's, fusible at 94°	3.50	.30
Methyl Acetate .....		.30
Methyl Iodide .....		.90
Methyl Orange Indicator .....		.40
Metol (developer) .....		.75
Mica, ground .....		.25
Microcosmic Salt .....		.80
Milk Sugar, cryst. ....		.45
Milk Sugar, powder .....		.30
Minium .....		.15
Molybdenum, metal	Grm., \$0.30	
Molybdenum, metal, 95%		3.50
Molybdenum Oxide (mono-)		1.10
Molybdenum Sulphide		1.20
Naphthaline, in flakes .....		.15
Naphthaline, pure	Carton	.50
Naphthol Alpha, recryst.		1.50
Naphthol Beta, resublimed	Carton	1.25
Naphthol Nitroso-Beta		12.00
Naphthylamine, alpha, pure .....		.90
		.30

Containers Included Unless Otherwise Specified.

	Pound.	Ounce.
Naphthylamine, chloride, alpha		\$0.25
Naphthylamine, sulphate, alpha .....		.30
Nessler's Solution	\$1.00	.20
Nickel, metal, in cubes	1.20	.15
Nickel, metal, chem. pure		1.00
Nickel, sheet .....		.20
Nickel, wire .....		.20
Nickel Acetate	1.80	.20
Nickel Carbonate	2.25	.20
Nickel Chloride	1.50	.20
Nickel Citrate .....		.30
Nickel Cyanide .....		.60
Nickel Nitrate, pure	1.00	.20
Nickel Oxide, black, com'l	1.20	.20
Nickel Oxide, black, chem. pure	6.00	.75
Nickel Oxide, green, chem. pure	1.80	.20
Nickel Phosphate .....		.35
Nickel Sulphate, com'l	0.40	
Nickel Sulphate, chem. pure	2.00	.25
Nickel and Ammonium Chloride	1.00	.20
Nickel and Ammonium Sulphate .....		.25
Nickel and Ammonium Sulphate, chem. pure .....		.75
Nicotine	Dram, \$0.60	
Nitre (See Potassium Nitrate).		
Nitrobenzol (oil mirbane) .....		.30
Nitronaphthalene .....		.75
Nitrosobetanaphthol	12.00	.90
Nutgalls .....		.50
Nutgalls, pow'd .....		.60
Oil Aniline, pure .....		.60
Oil Bergamot	6.00	.50
Oil Cedar	1.20	.20
Oil Cloves	1.60	.20
Oil Fusel	Gal., \$2.50	
Oil Lard, for blow-pipe lamps	Gal., 1.50	
Oil Linseed	Gal., 1.00	
Oil Olive	Gal., 2.50	
Oil Origanum .....		.40
Oil Turpentine	Gal., \$1.00	.25
Oil Turpentine, redistilled .....		.60
Orpiment, powder .....		.35
OXONE	per 2-lb. tin, \$1.50	

	Pound.	Ounce.
Ozokerite	\$0.30	
Palladium, metal	Grm., \$1.60	
Palladium, metal, black (Mohr)	Grm., 1.75	
Palladium Asbestos, 5%	Grm., .50	
Palladium Chloride, cryst.	Grm., 2.00	
Paraffine, pure .....	.20	
Paraldehyde	1.20	\$0.20
Paris Green .....	.50	
Pearl Ash (potassium carbonate) .....	.15	
Peptone, dry, Witte's	100 grm., \$1.10	
Petrolatum .....	.25	
Phenacetolin Indicator	1/8 oz., \$0.20	1.20
Phenolphthalein, pure	4.50	.40
Phenylenediamine Meta Hydrochlorate (metadiaminobenzol) .....		.80
Phenylhydrazine, pure	4.00	.40
Phenylhydrazine Hydrochlorate	4.00	.40
Phloroglucin	Grm., \$0.25	3.50
Phosphorus, red, amorphous .....		.25
Phosphorus, yellow, in sticks	1-lb. cans	1.00
Phosphorus, yellow, in sticks	1/2-lb. cans	1.20
Phosphorus, yellow, in sticks	1/4-lb. cans	1.40
Phosphorus, yellow, in sticks	1-oz. cans	.20
Phosphorus, yellow, in sticks, thin, for gas analysis .....		.30
Phosphorus Oxychloride .....		.40
Phosphorus Pentachloride .....		.30
Phosphorus Pentoxyde (acid phosphoric, anhydride)	Bottle, \$0.20	1.25
Phosphorus Trichloride .....		.30
Pipe Clay .....	.10	
Plaster Paris (calcium sulphate), com'l .....		.10
Platinum, metal, foil and wire	Grm., \$1.20	
Platinum, metal, manufactured utensils. (See Apparatus list.)		
Platinum, metal, black precip. (Pt. Mohr.)	Grm., 1.50	
Platinum, metal, sponges	Each, \$0.50	
Platinum Bichloride (platinic chloride), cryst., chem. pure		18.00
Platinum Bichloride (platinic chloride)	Grm., \$0.75	
Platinum Bichloride, 5% solution		1.25
Platinum and Hydrogen Chloride (chlor. platinic acid)	Grm., \$0.80	18.00
Platinum and Potassium Chloride	Grm., .75	20.00
(All other Platinum compounds to order at lowest prices.)		
Plumbago. (See Graphite.)		
Potassium, metal	Net, incl. tin and vial	1.35
Potassium, metal	In 1/2-oz.	1.50

Containers Included Unless Otherwise Specified.

	Pound.	Ounce.
Potassium, metal	In $\frac{1}{4}$ -oz.	\$1.60
Potassium, metal	In $\frac{1}{8}$ -oz.	2.00
Potassium Acetate .....		.15
Potassium Acetate, chem. pure .....		.15
Potassium Antimoniate .....		.15
Potassium Antimoniate, pure .....		.25
Potassium Arsenate, pure .....		.15
Potassium Arsenite, pure .....		.10
Potassium Bicarbonate, cryst. ....		.20
Potassium Bicarbonate, pow'd .....		.20
Potassium Bicarbonate, chem. pure .....		.10
Potassium Bichromate, com'l, cryst. ....		.20
Potassium Bichromate, com'l, pow'd .....		.30
Potassium Bichromate, chem. pure	Carton	.10
Potassium Binoxalate (salt of sorrel) .....		.30
Potassium Binoxalate, chem. pure .....		.15
Potassium Bisulphate, cryst., chem. pure .....		.15
Potassium Bisulphate, fused, chem. pure.....		.15
Potassium Bisulphite, chem. pure.....		.15
Potassium Bitartrate, com'l (argols) .....		.15
Potassium Bitartrate, powder, white (cream of tartar).....		.40
Potassium Bitartrate, chem. pure.....		.15
Potassium Borotartrate .....		.25
Potassium Bromate, chem. pure.....		.30
Potassium Bromide .....		.10
Potassium Bromide, chem. pure.....		.15
Potassium Carbonate, gran. (pearl ash).....		.15
Potassium Carbonate, gran. (pearl ash).....in cans of 70 lbs.		.11
Potassium Carbonate, gran. In bbls., special quotation.		
Potassium Carbonate, chem. pure.....		.15
Potassium Carbonate, chem. pure, pow'd.....		.15
Potassium Caustic, com'l	10-lb. tins, lb.	.12
Potassium Caustic, white, purified, in sticks.....		.15
Potassium Caustic, pure, by alcohol, in sticks.....		.15
Potassium Caustic, strictly chem. pure.....		.20
Potassium Chlorate, cryst. ....		.20
Potassium Chlorate, powder .....		.20
Potassium Chlorate, granular, pure.....		.40
Potassium Chlorate, cryst., chem. pure.....	Carton	.10
Potassium Chlorate, pow'd, chem. pure.....	Carton	.10
Potassium Chloride, pure .....		.25
Potassium Chloride, chem. pure.....	Carton	.10

Containers Included Unless Otherwise Specified.

	Pound.	Ounce.
Potassium Chloroplatinite		\$20.00
Potassium Chromate, com'l .....	.35	
Potassium Chromate, chem. pure.....	.60	.15
Potassium Citrate .....	.80	.15
Potassium Citrate, chem. pure.....	1.20	.20
Potassium Cobaltic Nitrite		1.00
Potassium Cyanate, pure		1.00
Potassium Cyanide, fused, white (for mining), 30%.....	.40	.10
Potassium Cyanide, fused, white, 30%.....	.30	
Potassium Cyanide, fused, 50%.....	.45	
Potassium Cyanide, granular, 50%.....	.55	
Potassium Cyanide, granular, 98%.....	.70	
Potassium Cyanide, chem. pure (domestic) 98 to 100%.....	.50	
Potassium Cyanide, chem. pure (domestic) 98 to 100%.....	.40	
Potassium Cyanide, chem. pure. In 100-lb. or 200-lb. cans, special price.		
Potassium Cyanide, chem. pure, Merck's, 98 to 100%.....	.50	.15
Potassium Cyanide, chem. pure, absolutely.....	3.50	.40
Potassium Ferricyanide (red prussiate of potash).....	.70	.10
Potassium Ferricyanide, chem. pure.....	1.00	.15
Potassium Ferrocyanide (yellow prussiate of potash).....	.30	.10
Potassium Ferrocyanide, chem. pure.....	.60	.15
Potassium Fluoride, chem. pure.....	1.30	.20
Potassium Formate, chem. pure.....	2.50	.25
Potassium Hydroxide. (See Potassium Caustic.)		
Potassium Hypophosphite, pure	1.50	.20
Potassium Hyposulphite (thiosulphate), pure.....	1.50	.20
Potassium Iodate	5.00	.50
Potassium Iodide, pure	3.00	.30
Potassium Iodide, chem. pure.....	4.00	.40
Potassium Manganate, chem. pure.....	.65	.15
Potassium Metabisulphite .....	.80	.15
Potassium Molybdate .....		.50
Potassium Nitrate, cryst. .....	.12	
(Special quotation in barrel lots.)		
Potassium Nitrate, granul. .....	.12	
(Special quotation in barrel lots.)		
Potassium Nitrate, cryst., chem. pure.....	.40	.15
Potassium Nitrate, powder, chem. pure.....	.40	.10
Potassium Nitrite, pure .....	.65	.15
Potassium Nitrite, in sticks, chem. pure.....	1.25	.20
Potassium Nitroprusside .....		.80
Potassium Oxalate, neutral, pure.....	.30	

Containers Included Unless Otherwise Specified.

	Pound.	Ounce.
Potassium Oxalate, chem. pure.....	\$0.60	\$0.15
Potassium Perchlorate, chem. pure, B. & A.....	1.50	.20
Potassium Permanganate, small crystals.....	.25	
Potassium Permanganate, cryst., pure.....	.35	.10
Potassium Permanganate, chem. pure, B. & A.....	.70	.15
Potassium Persulphate	2.00	.20
Potassium Phosphate, chem. pure, monobasic.....	1.00	.15
Potassium Phosphate, chem. pure, dibasic.....	1.00	.15
Potassium Silicate Solution (water glass).....	.40	.10
Potassium Silicate, dry, chem. pure	1.50	.20
Potassium Silico Fluoride, pure	2.00	.25
Potassium Stannate, pure	2.50	.30
Potassium Sulphate .....	.15	
Potassium Sulphate, chem. pure .....	.35	.10
Potassium Sulphide, fused (liver of sulphur).....	.30	
Potassium Sulphide, chem. pure .....	.80	.15
Potassium Sulphite .....	.60	.15
Potassium Sulphite, chem. pure.....	1.00	.20
Potassium Sulphocarbonate .....	.70	.15
Potassium Sulphocyanate, chem. pure.....	1.00	.15
Potassium Tartrate, chem. pure .....	.90	.15
Potassium Tetra-Oxalate	1.20	.20
Potassium Xanthogenate, pure	2.00	.30
Potassium and Zinc Cyanide	2.00	.20
Pumice Stone, lumps .....	.12	
Pumice Stone, powder .....	.10	
Putty Powder (tin oxide, gray) .....	.75	.10
Pyoktanin, blue		2.00
Pyoktanin, yellow		2.00
Pyridine, pure	2.50	.30
Pyrocatechin .....		.80
Pyroxelyn (gun cotton) .....		.40
Quartz, powdered .....		.10
Quicksilver. (See Mercury.)		
Raffinose		2.50
Realgar, powder .....		.40
Reddle, in sticks, for marking crucibles, etc. ....		.20
Resorcin .....		.160
Rochelle Salt (sodium and potassium tartrate), pow'd .....		.35
Rosaniline, pure .....		.40
Rosaniline Acetate .....		.40
Rosaniline Hydrochloride .....		.40

Containers Included Unless Otherwise Specified.

	Pound.	Ounce.
Rosin		\$0.10
Rubidium, metal, pure	1-10 grm.,	\$1.50
Rubidium Carbonate	Grm.,	.20
Rubidium Iodide	Grm.,	.20
Rubidium Sulphate	Grm.,	.20
Ruthenium, metal	Grm.,	6.00
Ruthenium Chloride, cryst.	Grm.,	2.50
Ruthenium Oxychloride	1½ grain,	1.75
Saccharin (Garantose)		\$0.30
Sal Ammoniac in lumps.....		.20
Sal Ammoniac, granular, white.....		.15
Sal Soda .....		.05
Salt, in sacks .....		.03
Saltpetre .....		.12
Sea Sand .....		.10
Sealing Wax, best, red, extra No. 6.....		.25
Selenium, metal, pure, in sticks.....		1.80
Shellac, orange .....		.70
Silica, powdered, com'l .....		.05

(Special prices in quantities.)

Silicon, metal, cryst.	Grm.,	\$0.30
Silicon, metal, amorphous.....	⅛ oz.,	.40
Silicon Chloride-tetra.....	per 10-grm. tube,	.80
Silver, metal, foil, chem. pure.....		1.25
Silver, metal, precipitated		2.00
Silver, metal, leaf	Per book,	\$0.15
Silver, metal, granulated, chem. pure.....		1.00
Silver Acetate		1.60
Silver Bromide		1.40
Silver Carbonate		1.50
Silver Chloride		1.00
Silver Cyanide		1.25
Silver Iodide		1.25
Silver Nitrate, pure, cryst., Mall.....		.80
Silver Nitrate, chem. pure, B. & A.....		10.00
Silver Nitrate, Merck's Reagent		18.00
Silver Nitrite		1.80
Silver Oxide		1.50
Silver Phosphate		2.00
Silver Sulphate		1.25
Soda Ash (sodium carbonate).....		.10

Containers Included Unless Otherwise Specified.

	Pound.	Ounce.
Soda Caustic, in drums	\$0.05	
Soda Lime, granul. ....	.55	\$0.15
Sodium, metal	Tins 1.00	.30
Sodium, metal	in $\frac{1}{2}$ lb. 1.20	
Sodium, metal	in $\frac{1}{4}$ lb. 1.40	
Sodium Amalgam	1.50	.20
Sodium Acetate, pure, granular .....	.20	
Sodium Acetate, chem. pure, cryst. ....	.40	.15
Sodium Acetate, chem. pure, fused.....	.60	.15
Sodium Alizarinsulfonate .....		.30
Sodium Arsenate .....		.25
Sodium Arsenate, pure .....	.60	.15
Sodium Arsenite .....		.25
Sodium Arsenite, pure .....	.80	.15
Sodium Biborate. (See Borax.)		
Sodium Biborate, cryst., chem. pure.....	.50	.15
Sodium Biborate, pow'd, chem. pure.....	.50	.15
Sodium Bicarbonate, com'l .....		.10
Sodium Bicarbonate	in 112-lb. kegs .03	
Sodium Bicarbonate, com'l.....	in barrels of 400 lbs. Special quotation	
Sodium Bicarbonate, cryst., chem. pure.....	Carton .25	.10
Sodium Bicarbonate, pow'd, chem. pure.....	Carton .25	.10
Sodium Bichromate, com'l .....		.20
Sodium Bichromate, chem. pure.....		.55
Sodium Bismuthate .....		.40
Sodium Bisulphate, cryst., chem. pure.....		.50
Sodium Bisulphate, fused, chem. pure.....		.60
Sodium Bisulphite, dry, com'l .....		.30
Sodium Bisulphite, dry, pure .....		.40
Sodium Bitartrate		1.10
Sodium Bromate		1.40
Sodium Bromide .....		.50
Sodium Carbonate, cryst. (sal soda).....		.05
(Special quotation in barrels.)		
Sodium Carbonate, pure, cryst.....	1-lb. cans .20	
Sodium Carbonate, pure, cryst.	5-lb. cans .15	
Sodium Carbonate, dry, for assaying.....		.20
Sodium Carbonate, dry, for assaying.....	in kegs of 130 lbs. .10	
Sodium Carbonate, calcined, for assaying.....	in kegs of 100 lbs. .08	
Sodium Carbonate, cryst., chem. pure	Bottle .40	.15
Sodium Carbonate, anhydrous, chem. pure	Carton .30	.10

Containers Included Unless Otherwise Specified.

	Pound.	Ounce.
Sodium Caustic, 98%, granular.....	.10-lb. cans	\$0.12
Sodium Caustic, white, purified, in sticks.....	.40	\$0.15
Sodium Caustic, pure, by alcohol, in sticks.....	.60	.15
Sodium Caustic, from sodium, chem. pure.....	2.00	.25
Sodium Caustic with Lime (soda lime), granul.....	.55	.15
Sodium Chlorate, pure, granular .....	.40	
Sodium Chlorate, chem. pure .....	.60	.15
Sodium Chloride, cryst., chem. pure.....	Carton	.30
Sodium Chloride, fused, chem. pure.....	.70	.15
Sodium Chromate, chem. pure	1.00	.15
Sodium Citrate .....	.90	.15
Sodium Cyanide .....	.1-lb. bottle	.65
Sodium Cyanide .....	.10-lb. tins	.50
Sodium Ferrocyanide, pure .....	.90	.15
Sodium Fluoride, pure .....	.90	.15
Sodium Formate, pure	1.20	.20
Sodium Hypophosphite	1.10	.20
Sodium Hyposulphate .....		.50
Sodium Hyposulphite (thiosulphate), cryst. or granular.....	.10	
Sodium Hyposulphite, cryst. or granular.....	in 112-lb. kegs	.04
Sodium Hyposulphite, chem. pure.....	in bottles	.35
Sodium Hyposulphite, chem. pure.....	in carton	.25
Sodium Iodate	6.00	.65
Sodium Iodide	4.00	.40
Sodium Metaphosphate .....		.20
Sodium Methylate, dry pure .....		.80
Sodium Molybdate	4.00	.40
Sodium Nitrate, granul., com'l .....	.10	
Sodium Nitrate, chem. pure .....	.40	.15
Sodium Nitrite, com'l .....	.25	
Sodium Nitrite, cryst., chem. pure .....	.50	.15
Sodium Nitrite, in sticks, chem. pure.....	.90	.15
Sodium Nitroprussiate .....		.60
Sodium Oleate	1.00	.20
Sodium Oxalate, chem. pure .....	.80	.15
Sodium Oxalate, "Sörensen," Merck's Reagent .....		.40
Sodium Permanganate .....	.50	
Sodium Peroxide	1-lb. cans	1.00
Sodium Peroxide .....	.10-lb. cans	.80
Sodium Peroxide, chem. pure		1.25
Sodium Peroxide, free from Carbon, for Calorimeter.....		1.80

	Pound.	Ounce.
Sodium Phosphate (di-sodic phosphate).....	\$0.20	
Sodium Phosphate, cryst., chem. pure.....	.35	\$0.15
Sodium Phosphate, dry, chem. pure.....	.60	.15
Sodium Phosphate, tribasic, chem. pure.....	1.00	.15
Sodium Phosphite .....		.40
Sodium Phosphomolybdate .....		.75
Sodium Phosphotungstate .....		.60
Sodium Plumbate	1.20	.20
Sodium Pyrophosphate, cryst., pure .....	.60	.15
Sodium Selenate		2.50
Sodium Silicate, dry .....	.15	
Sodium Silicate, solution (water glass).....	Bottle, \$0.10	.10
Sodium Silicate, cryst., pure	1.00	.15
Sodium Silico Fluoride	1.00	.15
Sodium Stannate, pure .....	.80	.15
Sodium Sulphate, com'l (Glauber salts).....	.10	
Sodium Sulphate, cryst., chem. pure.....	.35	.15
Sodium Sulphate, dry, chem. pure.....		Carton .35
Sodium Sulphide, cryst. ....in 400-lb. bbls.	.05	.10
Sodium Sulphide, cryst., pure .....	.50	.15
Sodium Sulphide, fused, com. ....	.40	.15
Sodium Sulphide, fused, pure .....	.70	.15
Sodium Sulphite, cryst. ....1-lb. cans	.15	
Sodium Sulphite, cryst. ....5-lb. cans	.12	
Sodium Sulphite, recryst., pure .....	.35	
Sodium Sulphite, dry, powder	1-lb. cans	.20
Sodium Sulphite, dry powder.....		5-lb. boxes .15
Sodium Sulphite, cryst., pure.....		Bottle .35
Sodium Sulphite, dry, pure		Carton .35
Sodium Sulphocyanate, cryst., pure.....		.25
Sodium Tartrate, cryst., pure .....	.80	.15
Sodium Tungstate	1.50	.20
Sodium Uranate (uranium yellow) .....		.60
Sodium Urate .....		.60
Sodium Xanthogenate .....		.25
Sodium and Ammon. Phosphate (microcosmic salt), chem. pure.....	.80	.15
Sodium and Potassium Tartrate, cryst. (Rochelle salts).....		.40
Sodium and Potassium Tartrate, pow'd (Rochelle salts).....		.40
Sodium and Potassium Tartrate, chem. pure.....	.60	.15
Sponges, for laboratory use.....	lb. \$0.50 to \$2.50	
Stannum. (See Tin.)		

Containers Included Unless Otherwise Specified.

	Pound.	Ounce.
Starch	\$0.15	
Starch, Iodized		\$0.35
Starch, Soluble, Zulkowsky's .....		.50
Starch, Soluble, Merck's	1.50	.25
Stearine .....	.30	
Stibium. (See Antimony.)		
Strontium, metal, from amalgam.....	1-10 grm., \$0.75	
Strontium, metal, by electrolysis.....	1-10 grm., 1.50	
Strontium Acetate	1.60	.20
Strontium Carbonate, com'l .....	.30	.10
Strontium Carbonate, chem. pure .....	.60	.15
Strontium Chloride, com'l .....	.30	.10
Strontium Chloride, chem. pure .....	.60	.15
Strontium Chromate .....		.25
Strontium Nitrate, com'l .....	.20	
Strontium Nitrate, chem. pure .....	.60	.15
Strontium Oxide, hydrated, cryst., pure.....	1.00	.15
Strontium Oxide, chem. pure	2.00	.25
Strontium Sulphate, chem. pure .....	.60	.15
Sulphur, in rolls (brimstone) .....	.10	
(Special price in quantities.)		
Sulphur Flour, sublimed (flowers of sulphur) .....	.10	
Sulphur, precipitated, pure .....	.30	
Sulphur, cryst. ....	.40	.10
Sulphur, cryst., pure .....	.75	.15
Sulphur Chloride .....	.75	.15
Sulphur Dioxide, in 20-oz. tins	Tin, \$0.60	
Sulphur Dioxide, in 70-oz. valve top tins	Tin, 4.00	
Tannin. (See Acid Tannic.)		
Talcum Powder .....	.10	
Tellurium, metal, powder	Grm., \$0.50	
Tellurium, metal, in sticks	Grm., .50	
Terra Alba .....	.10	
Test Papers, blue and red litmus and turmeric;		
In small books	Each, \$0.05; Doz. \$0.50	
In sheets	Each, .05; quire, .60	
Thallium, metal	Grm., .20	
Thallium Acetate	Grm., .35	
Thallium Bromide	Grm., .35	
Thallium Carbonate	Grm., .35	
Thallium Chloride	Grm., .30	
Thallium Iodide	Grm., .50	

Containers Included Unless Otherwise Specified.

	Pound.	Ounce.
Thallium Nitrate	Grm., \$0.25	
Thallium Oxide (thallic)	Grm., .30	
Thallium Oxide (thallous)	Grm., .30	
Thallium Sulphate	Grm., .25	
Thorium, metal	1-10 Grm., 2.50	
Thorium Oxide		\$2.00
Thorium Nitrate .....		.70
Thorium Sulphate		1.80
Thymol, pure	\$3.00	.30
Thymol Iodide (Aristol)	6.00	.60
Tin, metal, in bars .....	.80	.10
Tin, metal, foil, s. c. tobacco foil.....	.25	
Tin, metal, foil, thin tissue.....	.50	
Tin, metal, foil, pure .....	.75	.10
Tin, metal, granulated, com'l (mossy).....	.75	.10
Tin, metal, granulated, pure, B. & A.'s.....	.90	.10
Tin, metal, granulated, fine, pure, Merck's.....	1.25	.15
Tin, metal, powdered, pure, B. & A.'s.....	1.00	.15
Tin, metal, in sticks, pure, B. & A.'s.....	.75	.10
Tin Bichloride (fuming tetrachloride)	tin and g. s. b.	2.00
Tin Chloride (stannous chloride) protochloride, chem. pure.....	.80	.15
Tin Chloride (stannic chloride), chem. pure .....	.75	.15
Tin Oxide, white (stannic) .....	.90	.15
Tin Oxide, white, pure (stannic)	1.10	.15
Tin Oxide, gray (putty powder) .....	.60	.15
Tin Oxide, black (stannous), pure	1.50	.20
Tin Sulphate (stannous)	1.25	.20
Tin Sulphide (stannous)	1.50	.20
Titanium, metal, powder	Grm., \$0.80	
Titanium Chloride	Grm., \$0.25	
Titanium Oxide .....		.80
Toluidine (ortho) .....		.20
Toluidine (ortho), pure .....		.60
Toluidine (para) .....		.20
Toluidine (para), pure .....		.25
Toluidine Sulphate .....		.40
Toluol (toluene), com'l .....		.35
Toluol (toluene), pure .....		.60
Tripoli, powder .....		.15
Tropaeolin "OO" or "OOO" .....		.30
Tungsten, metal (wolfram), com'l	1.50	.15

Containers Included Unless Otherwise Specified.

	Pound.	Ounce.
Tungsten, chem. pure		\$0.80
Turmeric Powder	\$0.25	
Turmeric Paper.....Sheet, \$0.05; quire, \$0.60		
Uranium, metal, fused	Grm., .70	
Uranium Acetate	6.00	.60
Uranium Acetate, chem. pure, free from sodium.....	9.00	.90
Uranium Nitrate, chem. pure	5.50	.50
Uranium Oxide, black, pure .....		.80
Uranium Oxide, red (uranic acid), pure.....		.80
Uranium Oxide, yellow (sodium uranate) .....		.60
Uranium Sulphate .....		.60
Urea, cryst., pure (carbamide)	3.50	.35
Urea Nitrate	3.50	.35
Urea Sulphate .....		.60
Vanadium, metal, pow'd	Grm., \$3.50	
Vanadium Sulphide	Grm., .40	
Vanillin .....		.75
Vaseline, yellow	incl. can	.30
Vaseline, white	incl. can	.60
Vienna Lime, lumps .....		.20
Vienna Lime, powder .....		.25
Water Glass. (See Potassium Silicate or Sodium Silicate.)		
Wax, yellow .....	.50	.10
Wax, white .....	.70	.10
Whiting .....		.10
Wolfram, metal. (See Tungsten.)		
Wood Alcohol. (See Alcohol Methylic.)		
Xylo (xylene), pure .....		.60
		.15
Yttrium, metal, powder	Grm., \$7.50	
Yttrium Carbonate	Grm., 1.00	
Yttrium Nitrate	Grm., .50	
Yttrium Oxide, anhydrous	Grm., .40	
Zinc, metal (spelter), in slabs.....		.15
Zinc, metal, shavings .....		.25
(100 lb. and ton lots, special quotations.)		
Zinc, metal, sheet .....		.20
Zinc, metal, sheet, cut in strips .....		.25
Zinc, metal, sheet, chem. pure .....		.50
Zinc, metal, in sticks, Merck's, chem. pure.....		.50
		.10
Zinc, metal, in sticks, pure, absolutely free from As.....		.40
		.10
Zinc, metal, granulated (mossy) .....		.25

Containers Included Unless Otherwise Specified.

	Pound.	Ounce.
Zinc, metal, granulated (mossy), pure	\$0.40	\$0.10
Zinc, metal, granulated, Merck's, chem. pure.....	.55	.10
Zinc, metal, powdered (dust) .....	.30	
Zinc, metal, powdered (dust), in 35-lb. tins.....	.25	
Zinc, metal, powdered, Merck's, chem. pure (coarse) .....	.55	.10
Zinc, metal, powdered, B. & A.'s, chem. pure, 20 mesh.....	.50	.10
Zinc, metal, powdered, B. & A.'s, chem. pure, 30 mesh.....	.45	.10
Zinc, metal, shot, B. & A.'s, chem. pure.....	.40	.10
Zinc Acetate, cryst., pure .....	.50	.15
Zinc Carbonate, precip. .....	.30	.10
Zinc Carbonate, precip., pure .....	.60	.15
Zinc Chloride, com'l .....	.30	.10
Zinc Chloride, granul., pure .....	.40	.15
Zinc Chloride, fused, pure .....	.60	.15
Zinc Cyanide, pure .....		.25
Zinc Iodide .....		.50
Zinc Nitrate, pure .....	.75	.15
Zinc Oxide, by wet process, chem. pure.....	.40	.10
Zinc Oxide, chem. pure, free from Mn., B. & A.'s.....	.50	.15
Zinc Oxide, by dry process.....	.20	
Zinc Phosphate, chem. pure	1.25	.20
Zinc Phosphide .....		.30
Zinc Sulphate (white vitriol), com'l .....	.10	
Zinc Sulphate, cryst., chem. pure.....	.25	.10
Zinc Sulphide, pure	1.50	.20
Zinc Sulphite .....		.20
Zinc and Potassium Cyanide	2.00	.20
Zirconium, metal	Grm., \$0.60	
Zirconium Nitrate, cryst.....		.80
Zirconium Oxide, anhydrous		1.40
Zirconium Sulphate70

Containers Included Unless Otherwise Specified.

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